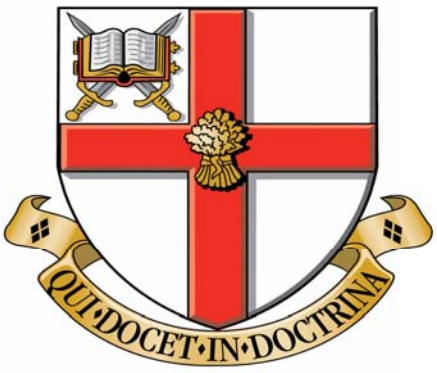

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Exercise on Prescription and its Role in the Promotion of Mental Health: A Critical Investigation

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ABSTRACT

The aim of the research was to investigate the current and potential role of exercise on prescription in the promotion of mental health. Key objectives were to determine the extent and nature of the mental health outcomes of an exercise on prescription scheme from the participant perspective; to acquire an insight into scheme impact at the 'wider' community level; and to explore the potential for augmenting the mental health promotive role of exercise on prescription through the application of mental health promotion theory. These objectives were pursued using triangulated methods. A self-completion questionnaire was employed for the quantitative element of the study, while in-depth interviews were conducted for the qualitative component of the investigation. Research participants were members of the Biddulph Valley Exercise on Prescription Scheme. Findings indicated that exercise on prescription may play an effective role in mental health promotion, generating a range of psychosocial health impacts promotive of mental well-being among participants and the wider community. Results also revealed that the augmentation of the mental health promotive role of exercise on prescription, in line with mental health promotion theory, was largely unwarranted, being inappropriate to the mental health needs of participants. These findings suggest that exercise on prescription confers benefits of an extent and nature as yet not widely recognised, and that the principles of mental health promotion may not be universally applicable. The implications for research and practice are to acknowledge the potentially significant psychosocial outcomes of exercise on prescription when targeting and evaluating initiatives, and when informing scheme development, to ensure that it is not theory, but needs assessment that takes precedence.

DECLARATION

"This work is original and has not been submitted previously in support of any qualification or course"

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1. INTRODUCTION

Rationale

In light of the benefits of exercise to mental health, it is surprising that exercise on prescription has assumed a principal focus of physical health 'deficits' while neglecting the promotion of 'positive' mental health.[1] The efficacy of exercise as an agent of mental health promotion is evidenced by a wealth of literature. The reduction of anxiety and depression through exercise is frequently reported (Biddle 1995; Bouchard *et al.*, 1993; Scully *et al.*, 1998; Taylor *et al.*, 1999; Weyerer & Kupfer, 1994) as is its capacity to promote resilience against stress (Sapolsky, 1998; Scully *et al.*, 1998; Taylor *et al.*, 1999). Regular exercise is also associated with enhanced self-efficacy, self-esteem and positive affect (Bouchard *et al.*, 1993; Taylor *et al.*, 1999) the experience of mastery, power and emotional stability, the achievement of self-actualisation, social gathering, and the promotion of interpersonal relationships (Musker, 1997). Moreover, exercise confers particular mental health benefit for older individuals in poor health (Buckley *et al.*, 1999; Ransford & Palisi, 1996; Taunton *et al.*, 1997), a profile representative of the typical exercise on prescription scheme population[2].

A recent effectiveness review of exercise promotion schemes in primary care (Riddoch *et al.*, 1998) noted this preoccupation with physiological improvement yet concluded that the most significant effects are psychosocial in nature; the implication being that the true impact of exercise on prescription may be unrecognised. Further, in addition to individual level health gains such as enhanced self-confidence and social support, the review noted that wider community benefit may be fostered, though this diffusion of impact is virtually "universally

[1] For instance, the objectives of the Stockport exercise on prescription scheme reflect an emphasis on physiological, clinical and exercise-related outcomes, although the evaluation of the programme revealed dramatic and stable improvements in the mental well-being of participants (Lord, 1993).

[2] See for instance Cropper and Mercer (1996), who report the mean age of participants of the Spelthorne exercise on prescription scheme as 47, and Biddle *et al.* (1994) who found the middle-aged to be particularly well represented in primary health care exercise promotion programmes.

ignored in the published literature" (Riddoch *et al.*, 1998, pp. 62). Consequently, it is an aim of the current study to address this "major and misleading omission" (Riddoch *et al.*, 1998, pp. 62), through investigation of the 'wider' mental health-related effects of exercise on prescription. Perhaps more importantly, as the findings of Riddoch *et al.*, (1998) were based upon the perceptions of programme administrators[3], and not the experience of participants, the present investigation will also seek to address this omission within an otherwise progressive review. Arguably, potentially significant insights into the role of exercise on prescription in mental health promotion are yet to be acquired. Thus, in search of these insights, the current research will investigate the subjective psychosocial outcomes of exercise on prescription as reported by participants.

The neglect of salutogenesis and mental health in research is reflected in exercise on prescription practice, perhaps conferring latent potential for holistic health gain, and indicating that the role of schemes in the promotion of positive mental health is yet to be fulfilled. Nonetheless, exercise on prescription has considerable potential to develop an explicit role in mental health promotion, congruous with the fundamental tenets of theory. Appropriate strategies for the promotion of mental health are those which foster supportive environments and individual resilience (Joubert & Raeburn, 1998), citizenship, connectedness through healthy structures and emotional resilience representing key foci for activity (Health Education Authority, 1997a, 1997b). Clearly, the social benefits available to the exercise on prescription 'community' may foster connectedness and citizenship, and thus a supportive environment, while exercise has the capacity to enhance individual resilience, particularly through the promotion of self-esteem and resilience against stress. The application of mental health promotion theory to exercise on prescription may then be considered an appropriate means of augmenting its mental health promotive role, and of maximising the holistic health

[3] Programme administrators included health promotion officers, exercise instructors, leisure centre managers and practice nurses.

benefit to the participating community. However, this proposal may only receive conjectural exploration within the parameters of the current investigation, via the comparison of participant views on the development of the mental health promotive role of exercise on prescription with the principles of mental health promotion theory.

Method

The research aims were pursued using triangulated methods, and with the participation of the Biddulph Valley Exercise on Prescription Scheme membership as the study population. Quantitative investigation was conducted using a self-completion questionnaire, to assess the extent to which scheme participants could corroborate the findings of Riddoch *et al.* (1998) and to determine the extent and nature of the mental health impacts of the exercise on prescription scheme, as experienced and perceived by these participants. The qualitative study employed in-depth, semi-structured interviews to further investigate the scheme's mental health outcomes, and explore potential means of maximising these outcomes with reference to mental health promotion theory.

Summary

As research to date may only be considered to scratch the surface (Taylor, 1996) of the mental health promotive capacity of exercise on prescription, it is through the detailed study of this capacity that the present research will investigate this "relatively unexplored" area, in which "the potential for future study is considerable" (Hammond *et al.*, 1997, pp. 39).

2. LITERATURE REVIEW

Exercise and mental health

It is suggested that the rise to prominence of the health promotion paradigm precipitated recognition of the potential of exercise as a positive health behaviour (Leith, 1994). Nonetheless, the effect of physical activity on health has traditionally been viewed from a biological perspective, with a focus of the alterations in physiological functioning induced (Leith, 1994). However, with the physical health benefits of exercise well established, attention has centred on the psychological outcomes of physical activity (Leith, 1994; Scully *et al.*, 1998). Currently, the view that the psychological health gains generated by exercise are more significant than the somatic health improvements produced, enjoys considerable support (Scully *et al.*, 1998).

The capacity of exercise to treat and prevent mental disorders has been extensively investigated. Causal links between physical activity and decreased levels of both depression and anxiety have been established (Biddle, 1995; Bouchard *et al.*, 1993; Scully *et al.*, 1998; Taylor *et al.*, 1999; Weyerer & Kupfer, 1994). In addition, exercise may positively influence short-term reactivity to and recovery from stress (Taylor *et al.*, 1999). Research has also evidenced the potential of physical activity to promote mental health (Leith, 1994). Fostering positive physical self-perceptions and self-worth (Taylor *et al.*, 1999), exercise may elevate self-esteem (Biddle, 1994, 1995; Bouchard *et al.*, 1993; Scully *et al.*, 1998; Taylor *et al.*, 1999), regarded as the most important measure of psychological well-being (Biddle, 1995). Further, physical activity is associated with enhanced mood state (Scully *et al.*, 1998; Taylor *et al.*, 1999), increasing vigour while reducing tension, fatigue, confusion and anger (Taylor *et al.*, 1999). In view of these positive psychological outcomes, the relationship between regular exercise and emotional well-being (Steptoe & Butler, 1996) is unsurprising.

The mental health potential of exercise is also recognised from the holistic perspective of health promotion, which offers a broader appreciation than the limiting parameters of established psychological constructs and conceptualisations of mental well-being allow. From this viewpoint, exercise represents an agent of positive mental health promotion, influential regarding the many dimensions of mental well-being (Musker, 1997). Physical activity is seen to promote psychosocial health through a capacity to stimulate social gathering and the development of interpersonal relationships (Musker, 1997). On a somewhat more profound level, exercise is forwarded as a subjective means of gaining mastery over one's life, of accessing feelings of power and emotional stability, of achieving self-actualisation (Musker, 1997). Further, exercise is conceptualised as tool of spiritual health enhancement, enabling the development of new insight and levels of consciousness (Musker, 1997).

Clearly, the potential of exercise for mental health promotion is considerable. However, its capacity to demote mental health must equally be recognised. Although cases of exercise dependence are rare (Taylor *et al.*, 1999), this compulsive behaviour may impair mental health through fatigue and the deterioration of personal relationships (Vines, 1989). In addition, social physique anxiety may threaten mental well-being (Scully *et al.*, 1998), a communal exercise context, for some, representing a stressor associated with significant negative arousal (Buckley *et al.*, 1999). Potential also exists for the experience of withdrawal upon termination of a regular exercise programme, though research to evidence this is limited (Scully *et al*, 1998).

Finally, the particular mental health benefits of exercise for the population of interest to this study are noteworthy. The fundamental characteristic of an exercise on prescription scheme population is inadequate fitness, injury or illness amenable to amelioration through regular exercise, while older age groups represent a significant proportion of scheme membership.

Research suggests that the mental health potential of exercise for such a population is significant. For instance, physical disorder confers increased risk of psychological illness (Weyerer, 1990 cited in Weyerer & Kupfer, 1994) and arguably greater need for mental health enhancement. In addition, the damage to self-esteem frequently associated with illness or injury is reparable through rehabilitation by exercise (Buckley *et al.*, 1999). Physical activity may also reverse or delay the loss of functional ability, independence and quality of life that older individuals often experience (Taunton *et al.*, 1997). Older exercise participants, through membership of an age group in which physical activity is less normative while morbidity and mortality are common, may enjoy a sense of achievement, and perceive reduced vulnerability to illness as a result of favourable social comparison (Ransford & Palisi, 1996). Moreover, the effect of exercise on subjective well-being, emotion and mood is seen to increase with age (Fox, 2000). Finally, the group membership and extension of social networks often accompanying the uptake of exercise may be especially promotive of mental health (Weyerer & Kupfer, 1994), the sense of community potentially associated with such social outcomes having a particular impact on the quality of life of older people (Fox, 2000).

The neglect of positive mental health promotion in exercise on prescription

In light of the mental health benefits of physical activity, one would expect exercise on prescription initiatives to capitalise on an inherent potential to enhance holistic health, and evaluative research of these initiatives to acknowledge a range of positive, psychosocial outcomes. However, a focus of physiological functioning and a pathogenic approach appears to prevail within exercise on prescription research and practice. The result of this narrow focus is the neglect of positive mental health promotion; in practice, at the potential expense of holistic health gain, in research, fostering misunderstanding and underestimation of the health improvement value of exercise on prescription.

The exercise on prescription concept dates to the Ancient Greek era when Hippocrates, the "Father of Medicine" prescribed exercise for mental illness (Leith, 1994). Evidently, the medical model remains dominant in the field. Frequently deployed in contribution to a strategy of coronary heart disease prevention (Cropper & Mercer, 1996; Edwards, 1998, 1999; Hammond *et al.*, 1997; Lord, 1993), exercise on prescription programmes seek to elevate levels of physical activity within target populations whose health status stands to improve through increased exercise (Cropper & Mercer, 1996). General practice professionals refer members of these populations to a leisure facility for a short-term regimen of supervised exercise, frequently to service a therapeutic or preventive objective (Cropper & Mercer, 1996), and thus to address health 'deficits' observed in patients. An expert-led, pathogenic approach is evident, while salutogenesis (Antonovsky, 1996) is clearly lacking.

This neglect of 'positive health' within exercise on prescription arguably confers latent potential for greater holistic health improvement. Although many operate under the aegis of the discipline, exercise on prescription schemes are largely uncharacteristic of health promotion as theoretically delineated; this atheoretical approach, in spite of the sound theory base of health promotion on which to draw (Riddoch *et al.*, 1998)[4], being somewhat surprising. Fundamentally, health promotion endeavour must be salutogenic (Antonovsky, 1996; Kickbusch, 1996) and maintain a 'whole person' focus (Antonovsky 1996). Antonovsky discouraged the dichotomous classification of persons by absence or presence of disease, instead advocating a health – dis-ease continuum as a conceptual framework for health promotion, and a philosophy of promoting movement towards its 'health' pole, the point of starting notwithstanding. However, the nature of exercise on prescription is to classify recipients by health deficit, and to address pathogenic factors to achieve the absence of disease. Thus, salutogenic factors are neglected, although exercise represents a multi-

[4] In defence of exercise on prescription practice, this failure to adhere to theoretical principles is recognised as a flaw of health promotion practice in general (Raeburn & Rootman, 1998; Antonovsky, 1996).

faceted salutogenic resource. Further, although empowerment is a cardinal principle of health promotion (Raeburn & Rootman, 1998; World Health Organisation, 1986) its pursuit or achievement within exercise on prescription is limited. Key to the remit of health promotion of "enabling people to increase control over and to improve their health" (World Health Organisation, 1986), is their development of autonomy, independence and self-efficacy, and acquisition of knowledge and skills (Raeburn & Rootman, 1998). However, the typical expert-led model of exercise on prescription is not accommodating of this empowerment process; its capacity to promote holistic, sustainable, positive health improvement as opposed to the short-term treatment or prevention of health deficits is therefore questionable. For instance, research suggests that the self-efficacy of exercise on prescription scheme participants may be largely dependent upon professional supervision (Darbishire & Glenister, 1998), without which, they may be unable to maintain physical activity and the associated mental health benefits. Notably, the Biddulph scheme seeks to empower participants to exercise independently and regularly following programme completion. Evaluating the achievement of this objective presents an important avenue for the current research.

The neglect of holistic health in favour of a biomedical model is reflected in evaluative research of exercise on prescription. In particular, a focus of largely clinical, physiological outcomes, such as indices of physical fitness or anthropometric changes, dominates (Biddle *et al.*, 1994; Riddoch *et al.*, 1998). However, exercise on prescription carries extensive psychosocial benefits (Biddle *et al.*, 1994; Smith *et al.*, 1996) of greater significance than the physiological outcomes generated (Riddoch *et al.*, 1998). Research has indicated that while physical effects may be small, the psychological outcomes of scheme participation are clear and considerably more enduring (Taylor, 1996). The duration of scheme involvement is insufficient to improve many of the physical conditions for which participants are referred (Lord & Green, 1995), though the psychosocial benefits of participation are immediate

Buckley *et al.*, 1999). Moreover, motives for participation relate more to holistic well-being, for instance meeting friends and enjoying oneself, than to physiological health (Lord, 1993). In addition, the impact of schemes may encompass the 'wider community', including programme administrators and the family and friends of participants (Edwards, 1998, 1999; Riddoch *et al.*, 1998). Unsurprisingly, the focus of research to date is considered restrictive and ignorant of the true value of exercise on prescription initiatives (Riddoch *et al.*, 1998). Consequently, greater attention to the psychological outcomes of scheme participation for a true insight into the effects experienced has been called for (Taylor, 1996), as has research to address the "major and misleading omission" within the published literature regarding the wider impacts of exercise on prescription (Riddoch *et al.*, 1998, pp. 62). The current research will answer these calls from the field.

The failure of exercise on prescription research to observe the salutogenic and mental health promotive potential of schemes is well evidenced and of some concern, as is the lack of credence awarded subjective evaluation by participants. Experimental study of objectively measurable outcomes is widely advocated (Glenister, 1996; Hammond *et al.*, 1997; Iliffe *et al.*, 1994; Taylor, 1996) and the incidence of morbidity and mortality advanced as appropriate evaluative criteria (Hammond *et al.*, 1997). For instance, Glenister (1996) negates the subjectively assessed outcomes of two schemes, (encompassing reduced stress levels, increased confidence, friendship and support) as inadequate evidence of the effectiveness of exercise on prescription in promoting mental health. His rationale for this judgement is the failure of the associated evaluation exercises to employ an experimental design, to explicate measurement methods and to analyse results for statistical significance. Such bias towards the physiological, the objective, and the deficit model in evaluation research is worrying in fostering 'evidence-based' suggestions that exercise on prescription may be ineffective (Cropper & Mercer, 1996). The neglect of salutogenesis, mental health, and subjective

evaluation should be challenged if the true value of exercise on prescription is to be recognised through research, and pursued in practice. A focus shift towards the promotion of positive well-being, and the enhancement of the mental dimension of health is arguably necessary. The logical means of broadening and 'balancing' current research and practice is thus through the assimilation of mental health promotion theory.

A new paradigm for exercise on prescription

What will now be considered then, is a paradigm for exercise on prescription with the capacity to fulfil the latent potential for mental health promotion observed. Undoubtedly, the mental health promotion paradigm offers this capacity. However, the current model of exercise on prescription is not to be regarded as obsolete or ineffectual. Though contrasting, the current biomedical and proposed salutogenic approaches may be considered complimentary, and in combination to present a balanced means of operationalising exercise on prescription. The short-term curative approach, the 'prescription' for exercise, represents a catalyst (Buckley *et al.*, 1999), on the momentum from which a developmental, salutogenic model may build in galvanising movement away from dis-ease, and towards health.

The conceptualisation of mental health assumed here is both positive and holistic, embracing a broad perspective of the elements and determinants of the mental dimension of health. Thus, the scope of mental health and its promotion is to be considered extensive, encompassing the social, the emotional, the cognitive and the spiritual (Health Education Authority, 1997a). Also cardinal to this conception of mental health promotion is a focus of mental health rather than mental illness; pursued is not the reduction of illness or risk, though this may result, but positive outcomes, such as enhanced well-being and coping capacity, and ultimately

positively experienced quality of life (Joubert & Raeburn, 1998). To illustrate, mental health and mental health promotion have been defined respectively as[5],

> "the capacity...to feel, think and act in ways that enhance our ability to enjoy life and deal with the challenges we face...a positive sense of emotional and spiritual well-being." (Joubert & Raeburn, 1998, pp.16)

> "the process of enhancing the capacity of individuals and communities to take control over their lives and improve their mental health."
> (Joubert & Raeburn, 1998, pp.16)

Numerous models to guide the promotion of a holistic and positive conceptualisation of mental health exist. Observed here are the prime factors common to these models to provide a broad conceptual framework, as advocated within the literature, (Herron & Mortimer, 1999), which may appropriately be applied to exercise on prescription. This framework may be considered two-dimensional. Primarily, individual or emotional resilience is a key goal of mental health promotion (Health Education Authority, 1997a, 1997b; Joubert & Raeburn, 1998), congruous with notions of 'self-reliance' and 'autonomy' central to lay conceptions of mental health preservation (Rogers & Pilgrim, 1997). Contributors to emotional resilience are self-esteem, coping ability in the face of stressful life circumstances, and empowerment (Health Education Authority, 1997a, 1997b). As noted earlier, exercise may enhance both self-esteem (Biddle, 1994, 1995; Bouchard *et al.*, 1993; Leith, 1994; Taylor *et al.*, 1999) and ability to cope with stress (Biddle, 1994, 1995; Sapolsky, 1998) identified from lay and professional perspectives as detrimental to mental health (MacDonald & O'Hara, 1998; Rogers & Pilgrim, 1997). Regarding empowerment, exercise on prescription has the potential to enable participants to take control over and improve their mental health. Schemes are

[5] The definitions of Joubert and Raeburn (1998) are presented here as illustrative, not definitive. Illustrated is the broad and positive conceptualisation of mental health and mental health promotion and a clear connection with the Ottawa vision of health promotion (World Health Organisation, 1986). However, the presentation of definitions does not reflect the intention to delimit mental health or mental health promotion. The contention that concepts of mental health and thus of mental health promotion are inherently contested (Herron & Mortimer, 1999) is recognised, as are the postulations that pluralism and subjectivity are fundamental to the multiplicity of perceptions of mental health and mental health promotion (Herron & Mortimer, 1999; Mauthner *et al.*, 1999) and that conclusive definition is therefore elusive (Money, 1996).

equipped to provide the resourcing required to enable empowerment, having the capacity to offer access to facilities and support, and to facilitate the knowledge and skills acquisition deemed necessary (Joubert & Raeburn, 1998).

Secondly, a sense of citizenship is a fundamental goal of practice (Health Education Authority, 1997a, 1997b), reflecting the community or social dimension of mental health and its promotion. Within this conceptualisation of citizenship, social support, strong social networks and a sense of integration are key to mental health, as are a positive sense of belonging and participation in society (Health Education Authority, 1997a, 1997b). Via the promotion of supportive social networks and the subsequent generation of social capital associated with positive mental health (Friedli, 1999), exercise on prescription may potentially strengthen the social fabric, and the mental well-being, of the participating community. Mental health promotion through such social processes was apparently instrumental in exercise on prescription to the Life Project (Hammond *et al.*, 1997). Compliance was improved via scheme alterations that included the adoption of a group approach based on a common identity such as a special need. With a participant noting the sense of "everybody being in the same boat" (Hammond *et al.*, 1997, pp. 37), and the confidence gained as a result, the promotion of social support and a sense of belonging may arguably have increased compliance by generating greater psychosocial health benefit for participants.

Evidently, exercise on prescription may promote mental health in a manner congruous with theory. Further, the application of the mental health promotion paradigm to practice, accommodating the promotion of holistic health, may result in greater mental health benefit for participants and the wider community than has to date been achieved somewhat inadvertently. The universal significance of mental health and the largely pathogenic

approach of exercise on prescription to mental 'health' promotion, highlights the importance *of reorienting the field to fulfil its potential role in the promotion of positive mental health.*

The importance of mental health presents a potent rationale for research of the mental health outcomes of exercise on prescription and its potential to develop a purposive role in the promotion of mental health. Mental health is fundamental to holistic well-being (Friedli, 1999), and takes "epistemological precedence" over any other dimension of health (Money, 1996, pp. 56). Thus, the need for mental health promotion is universal (Health Education Authority, 1997a). In enabling the achievement of positive health by enhancing personal and social strengths (Health Education Authority, 1997a) and development (Orley & Birrell Weisen, 1998) it is relevant to all, not only to those experiencing mental 'dis-ease' (Health Education Authority, 1997a). The moral argument stands that mental health promotion is of autotelic value (Health Education Authority, 1997a; Orley & Birrell Wiesen, 1998) and that fostering mental, in addition to physical well-being is a primary responsibility (Health Education Authority, 1997a). Further, the promotion of mental health may benefit not only the individual and the community, for instance in enhancing enjoyment of life and citizenship, but also wider society through contribution to New Public Health objectives in areas such as community participation, social exclusion and emotional literacy (Health Education Authority, 1997a). Moreover, research which may inform and expand mental health promotion endeavour is essential in view of the neglect of positive mental health within both health promotion (Musker, 1997), and mental health promotion through a focus of treatment or prevention rather than salutogenesis (Friedli, 1999) and the scarcity of interventions explicitly promotive of mental health (Mauthner *et al.*, 1999). The current investigation observes the resultant entreaties for a paradigm shift away from the framework of medicine towards positive mental health (Musker, 1997), and for mental health promotion to become a priority within all health improvement endeavour (Friedli, 1999).

Despite the value of a focus of positive mental health promotion, it has rarely been applied in exercise on prescription. It is the pathogenic model, dominant within mental 'health' promotion and dictating attention to distress and dysfunction rather than positive states of well-being (Money, 1996), that appears to underlie recognition of the mental health value of exercise on prescription. As in the wider field of mental health promotion, the term mental health is commonly employed to denote mental illness, while indicators of success frequently relate to mental illness as opposed to well-being (Friedli, 1999). This deficit model needs no further ambassador in exercise on prescription, however is certainly evident in mental health-related research. For instance, Darbishire and Glenister (1998) investigated and evidenced the clinical effectiveness of exercise on prescription as a treatment for depressed and anxious patients. Although the study claimed to illuminate the mental health benefits of scheme participation for the patient group, mental illness was its key focus. Similarly, the Stockport scheme reportedly generated considerable improvements in the mental health of participants (Lord & Green, 1995), however, mental illness provided the principal reference point, a version of the General Health Questionnaire, a measure of psychiatric disturbance, being employed in the evaluation research (Lord, 1993). This tendency to consider the promotion of mental health from the perspective of the deficit model of disease, reinforces the assertion that a salutogenic view of mental health promotion through exercise on prescription is lacking. Such a view must be adopted if positive, holistic health is to be actively promoted. Further research into the mental health benefits of exercise on prescription from a salutogenic perspective is required to address the current imbalance of investigation and extend the knowledge base of the field to ultimately inform practice.

The developing role of exercise on prescription in the promotion of mental health

The neglect of mental health promotion in exercise on prescription research and practice has presented a key rationale for the current research. However, a narrow and negative

conceptualisation of mental health is not universally held within the field. Recent research has begun to encapsulate a holistic view of well-being, incorporating the many dimensions of health. It is apparent that the evolution of exercise on prescription towards holistic health promotion, through research at least, may have passed theoretical parameters.

The research of Riddoch *et al.* (1998), by examining scheme impact beyond referred patients, provided promising evidence that exercise on prescription may promote mental health among both participants and the wider community. Findings revealed that schemes have a "considerable impact in a range of parameters and on a variety of people" (Riddoch *et al.*, 1998, pp. 4). Participants gained from the opportunity to socialise, to form friendships, and to share experiences with others suffering similar health problems, and also from reciprocal support. Scheme involvement was thus found to combat loneliness and social isolation. The sense of belonging to the group and the associated psychological benefits were considered significant. Further, the self-esteem and self-confidence of participants was enhanced, conferring an altered perception of life to the extent that their lives may be "revolutionised". Those suffering from stress, anxiety and depression were seen to experience an improvement in their condition, and to modify their outlook on life. For older participants and those with a family history of illness, the scheme presented a means of addressing concerns regarding the future, enabling positive action to counteract the effects of ageing and protect health. Those recovering from illness or surgery were able to increase their independence and functionality, and regain their previous way of life. Improved quality of life was therefore a potential outcome. Positive personal changes for participants were seen to confer an equally positive impact within the home environment. Community benefit was also generated through a "snowball" effect, the friends and family of patients and scheme administrators being motivated to exercise having observed striking changes in the appearance and demeanour of participants. Finally, in gaining health and fitness-related knowledge, patients were enabled to

take responsibility for their own health. Ultimately, the exercise on prescription scheme became a "meaningful" aspect of life for many participants (Riddoch *et al.*, 1998).

Despite the value of the insight offered by this research, in seeking the views of scheme administrators, and electing not to involve scheme participants, findings which pertain to participants are questionable. For instance, the potential for exercise-induced psychological health improvement to catalyse lifestyle change is a little researched, yet important point of enquiry (Glenister, 1996). However, the review could only note that such improvement was "expected" to reduce health-damaging behaviours other than physical inactivity (Riddoch *et al.*, 1998). Moreover, from a mental health promotion viewpoint, an approach which excludes the personal, subjective experience, yet recognises the 'expert' perception of this experience, is inappropriate (Joubert & Raeburn, 1998). Thus, the research of Riddoch *et al.* (1998) defines a clear route for progressive investigation of the role of exercise on prescription in mental health promotion. Firstly, the study highlighted the limited scope and volume of research to date, and concluded that further investigation is "undoubtedly necessary" (Riddoch *et al.*, 1998, pp. 51), a new focus of the psychosocial and 'wider' outcomes of schemes being advocated. Secondly, due to the discord between the selection of the research participants, and the prioritisation of subjective experience within mental health promotion theory, study of scheme impact from the participant perspective is also dictated, including the potential for any psychological health improvement induced to catalyse lifestyle change. The present investigation will therefore seek to extend the knowledge base of the field by exploring the individual and 'wider' mental health-related outcomes of exercise on prescription, via comparison of the subjective experience of scheme participants and the perceived effects documented by Riddoch *et al.* (1998).

Investigation of the subjective experience of mental health gain through exercise on prescription has been pursued to a limited extent within general evaluation research (Edwards, 1998, 1999; Taylor, 1996). Though investigation of mental health outcomes was restricted, results indicated that exercise on prescription may play a role in the promotion of mental well-being. Seeking the 'open-ended' perceptions of participants, Taylor (1996) found that psychological benefits were most commonly experienced, with high adherers noting social benefits in particular. The research of Edwards (1998, 1999) evidenced both community-wide and personal mental health-related scheme impacts. In the most recent study (Edwards, 1999), 50% of respondents experienced mental health improvement, encompassing enhanced social confidence and concentration, reduced stress and a more positive outlook. In addition, 75% noted further indirect health gains, including the opportunity to socialise, to meet new people and leave the home environment, and personally motivating others to exercise. Although encouraging, these results relating to the Biddulph scheme (Edwards, 1998, 1999), as those of Taylor (1996), only "scratch the surface" of the mental health benefit associated with exercise on prescription (Taylor, 1996). Hence, these promising findings present a rationale for in-depth, focused research of the role of exercise on prescription in promoting mental health.

Finally, if such progressive research is to inform practice, a focus not only of the outcomes generated, but also of the means of generating and maximising these outcomes is required. For exercise on prescription to play a purposive role in the promotion of mental health, and potentially generate greater holistic health benefit, the application of theory to practice is perhaps necessary. However, to remain consistent with mental health promotion theory, research must value the principles of needs assessment, user involvement and consultation (Health Education Authority, 1997a), recognise diversity in mental health status, needs and wishes (Joubert & Raeburn, 1998), and therefore accommodate a qualitative approach (Secker, 1998). In view of the importance of 'lay' expertise (Secker, 1998) and the danger of

enforcing professional values on the basis of theoretical assumptions (Mauthner *et al.*, 1999), exploratory study of the relevance of theory to subjective experience and needs is appropriate. Thus, a second focus for the current research is the comparability of mental health promotion theory with participant proposals for the development of the exercise on prescription scheme to accommodate a purposive mental health promotion role.

Conclusion

From this review of the literature, study of the current and potential role of exercise on prescription in the promotion of mental health appears necessary. Primarily, if the principle of mental health promotion is to be upheld, investigation is warranted of the subjective impacts of exercise on prescription as experienced by scheme participants. Such investigation will contribute to the knowledge base of the field in confirming or negating the perceived impacts of participation as reported by Riddoch *et al.* (1998), and in providing a more comprehensive and focused insight into the role of exercise on prescription in mental health enhancement than has been attained previously. Secondly, the prioritisation of physical health and the deficit model of disease, in addition to expert domination within exercise on prescription, creates a 'health vacuum', salutogenic endeavour being neglected at the particular expense of mental health promotion. Arguably, exercise on prescription must evolve beyond these biomedical parameters and adhere to a holistic, salutogenic paradigm, if its role in the promotion of mental health is to be purposive and fully exploited. It is a task for further research more extensive than the present study to empirically test the efficacy of such a model of exercise on prescription. However, the current research may allow a tentative exploration of the theoretical conjecture on which future study may build.

3. METHODOLOGY

Introduction

Both quantitative and qualitative means of investigation were employed to pursue the research aims. Selection of methods was dictated by the requirements of the investigation, directives drawn from the research methods and topic-related literature (reviewed earlier), and a restrictive time limitation. A questionnaire was utilised to assess the extent to which the exercise on prescription scheme population could subjectively corroborate the findings of Riddoch *et al.* (1998), and to determine the extent and nature of the scheme's mental health-related outcomes as directly experienced by participants and as perceived by participants to be experienced by the wider community. A series of in-depth, semi-structured interviews were subsequently conducted to further investigate the mental health promotive outcomes of the scheme and potential means of maximising such outcomes with reference to mental health promotion theory. This chapter therefore details two distinct, yet complimentary research tasks.

Participants and ethical issues

The study population comprised of current members of the Biddulph Valley Exercise on Prescription Scheme. Access to this population, and permission to conduct the research, was granted by Staffordshire Moorlands District Council, the Local Authority leisure provider to the programme and a principal member of the project steering group. (See appendix a for letter of application for research approval and appendix b for notification of research approval). Ethical approval of the research was not deemed necessary by Chester College, the supervising academic institution. All data generated by the research were anonymous. Names of participants were not connected to information provided. Respondents were informed that the disclosure of complete results would be limited to Chester College for academic purposes and that a synopsis of conclusions would be forwarded to Staffordshire Moorlands District

Council, and to the Lifestyles fitness suite at Biddulph Valley Leisure Centre, for the information of research participants.

Procedures: The quantitative investigation

Sampling

The entire scheme population of 25 was surveyed. 52% of this population were female and 48% were male. 'Blanket' coverage of the participant group was sought to generate adequate and representative response data, in view of the small number of regular participants at the time of the study.

Data collection and instrumentation

The content of the questionnaire (see appendix c), designed for the specific purposes of the investigation, was informed by the 'topical questions' and 'response categories' utilised in the research of Riddoch *et al.* (1998), and selected topic-specific findings of this research.

The instrument was self-administered, respondents being instructed to circle the appropriate response to statements relating to social, psychological, behavioural, emotional and cognitive effects of scheme participation, and the scheme's 'wider' mental health-related impacts. A five-point Likert scale was utilised to measure responses, generating ordinal level data. Simple demographic data relating to age and sex were also sought.

General guidelines for questionnaire layout, statement form, order and wording were observed (Bowling, 1997).

Instrument distribution and collection

Questionnaires were distributed and collected via the fitness suite, in order to ensure receipt only by those regularly engaging with the scheme. Questionnaires were accompanied by a

covering letter, (see appendix d) which detailed the purpose and significance of the research and covered issues of confidentiality and disclosure of results. The letter also represented a potential means of securing the cooperation of participants and maximising response, as did the distribution and receipt of questionnaires in the facility context. Fitness suite professionals were able to personally remind and encourage participants to complete and return the questionnaire, while posters were displayed in the fitness suite and changing facilities as an additional aide-memoire (see appendices e and f).

Data analysis[6]

MINITAB was utilised for all data, graphical and statistical analysis. Pareto analysis was conducted to show the relative proportions of responses within response categories, by opinion statement, by domain, and for the questionnaire overall. Graphical analysis of frequency of response by opinion statement, by domain, and for the questionnaire overall was conducted by use of boxplots, together with statistical data analysis to quantify central tendency and consistency of response using the median and interquartile range. As ordinal level data is inclusive of extreme responses, views or preferences, the median was the appropriate measure of central tendency being insensitive to extreme values.

Procedures: The qualitative investigation

Recruitment of participants

Respondents were recruited by letter of invitation (see appendix g), the content of which was in accordance with standard guidelines (Rudestam & Newton, 1992). Letters were distributed by fitness suite professionals within the facility setting to all scheme members. Those volunteering to participate in the research exercise were asked to provide contact details. Volunteers were subsequently telephoned and interviews scheduled at their convenience.

[6] As advocated by Bowling (1997), a statistician was consulted to assist the investigator in determining the relevant approach to data analysis, and advised on the appropriate computer package to employ.

Sampling

Due to the time-consuming and complex nature of qualitative interviewing and subsequent data analysis (Bowling, 1997), a sample of 5 participants was considered appropriate. Recruitment procedure yielded exactly 5 volunteers for interview (4 males and 1 female) and therefore dictated use of a convenience sample constituted by these 5 volunteers.

Data collection and instrumentation

A semi-structured, focused interview format was employed as conducive to the acquisition of specific information while accommodating latitude in response, and the in-depth exploration of experience and opinion (Bell, 1993; Bowling, 1997).

The interview schedule (see appendix h) was structured to guarantee comprehensive coverage of the areas of research interest. Open-ended questions were employed to ensure that the information sought was obtained, while allowing the respondent freedom to express their personal views and discuss their subjective experience, as advocated by Bell (1993).

Preliminary questions covered demographic and background information to establish each respondent's stage of progression through the programme and scheme-related activities. The principal and concluding sections of the interview respectively accommodated 'free response' regarding the subjectively defined mental-health related outcomes of the scheme, and open comment on the research topics addressed in general. The main body of the interview schedule was informed by key elements of mental health promotion theory[7] (reviewed earlier) relatable to exercise on prescription scheme outcomes and their maximisation. The interview

[7] This element of the interview schedule was informed by prevalent themes common to a number of theoretical perspectives on mental health and its promotion (Friedli, 1999; Health Education Authority, 1997a, 1997b; Herron & Mortimer, 1999; Joubert & Raeburn, 1998; MacDonald & O'Hara, 1998; Money, 1996; Rogers & Pilgrim, 1997) This collation of common themes to construct a conceptual framework (in this case on which to base the interview schedule) is in line with advocacy from the academic literature (Heron & Mortimer, 1999).

schedule was thus structured to focus discussion in accordance with the aims of the study, as recommended by Rudestam and Newton (1992).

Interview venue and procedure

Interviews were conducted in a private room within the fitness suite facility, selected to ensure uninterrupted discussion and freedom of response, and for its familiarity to respondents.

Interview procedure was in accordance with established protocol (Bell, 1993; Bowling, 1997). Prior to the commencement of the interview proper, respondents were provided with written details of the study (see appendix i) covering the research aims, confidentiality, the source of research approval, disclosure of results and requesting their permission to audio-tape record the discussion. These details were also articulated by the investigator as part of a broader introduction to the interview. 'Ice-breaking' questions (Bowling, 1997) were utilised to initiate the discussion.

Interviews were audio-tape recorded for high fidelity of data (Rudestam & Newton, 1992), to enable detailed analysis of the information provided, and to allow the investigator to fully attend to the participant (Bowling, 1997). Brief notes were also taken throughout the course of the discussion and post-interview comments recorded to facilitate subsequent data analysis and contextualisation.

Interview recordings were transcribed in preparation for data analysis. A synopsis of each interview was composed using during- and post-interview notes, paraphrasing and verbatim extracts.

Data analysis

The text-based data was categorised as per the serial indexing categories imposed by the interview schedule, after Mason (1996). Data was then coded accordingly and thematic analysis conducted after the sequential process advocated by Hek et al. (1996).

Methodological rationale and critique

Methodological approach

The combination of quantitative and qualitative techniques is common within exercise on prescription research[8], endorsed by people-centred health promotion theory (Raeburn & Rootman, 1998) and frequently advocated (Bowling, 1997; Rudestam & Newton, 1992), often with a view to validation through triangulation. The established rationale for the quantitative and qualitative approaches to research were applicable to the current investigation. Quantitative techniques are appropriate to the study of a previously investigated subject amenable to valid and reliable measurement (Bowling, 1997), and to research seeking responses to questions predetermined by the investigator (Milburn *et al.*, 1995). Alternatively, qualitative methods are essential to the investigation of unexplored areas and to the attainment of rich and illuminative data relating to complex issues (Bowling, 1997), seeking what the respondent wishes to disclose in relation to a research topic (Milburn *et al.*, 1995) and thus issues of significance to the informant as opposed to the researcher (Bell, 1993).

Regarding the research subject of exercise on prescription, the importance of qualitative methods to meaningful interpretation is recognised (Darbishire & Glenister, 1998). The present research adopted a 'free response' approach, as advocated by Taylor (1996), to the investigation of the mental health-related impacts of the exercise on prescription scheme from the subjective perspective of participants. Seeking 'open-ended perceptions of referral', and

[8] (see for instance Lord, 1993 and Taylor, 1996)

thus pursuing qualitative analysis, was considered important by Taylor (1996) and the present investigator, in allowing the exploration of individual interpretations in depth and without the constraints of fixed-response questions (as were utilised in the questionnaire).

With respect to triangulation and validation, the assumption that the combination of quantitative and qualitative research methods generates the most reliable and valid results is questionable (Milburn *et al.*, 1995), and was not the rationale for the triangulation of methods in the current study. While the potential conferred by triangulation of methods for validation is recognised, so too is the contention that triangulation is an imperfect means of validation due to the limited comparison that may be drawn between findings generated by differing methods, when the means and circumstances of production may invariably shape results (Bloor, 1997).

Quantitative research methods: Rationale, validity and reliability

Limited piloting of the questionnaire was conducted with two members of the exercise on prescription scheme. This piloting exercise did not highlight any flaws in the instrument, therefore the completed pilot questionnaires were retained for analysis. Face and content validity were assessed by the investigator and the research supervisor in the interests of internal validity. External validity was sought via the blanket distribution procedure, with respect to the application of findings to the scheme population as a whole. While the Biddulph population represents a sub-sample of the broader exercise on prescription population nationwide, generalisation of findings beyond this locality scheme was not an objective. The findings of the current study may only be seen as representative of this small, specific socio-geographic population. In view of sampling error, the endeavour to draw broad conclusions about other sub-populations would be inappropriate.

The rationale for use of a fixed-response choice, self-administered questionnaire was pertinent to the current research. Threats to reliability and validity posed by social desirability bias and interviewer bias, inherent to the qualitative interview method, are rendered inapplicable by anonymity and self-administration (Bowling, 1997). In addition, the economical and rapid coverage of a large population accommodated by the method (Bowling, 1997) was of advantage due to the time limitation on the research exercise.

A number of disadvantages of the method must however be recognised. Non-response, acquiescence response set, response style and mood bias may potentially influence the reliability and validity of results (Bowling, 1997). Further, the data generated may be less reliable than that produced by personal interview. Primarily, the investigator is not available to provide clarification when required, and secondly can not ensure that the participant completes the questionnaire independently. Potential exists for the responses of participants to be influenced by others, and for the questionnaire to be completed by someone other than the individual of research interest (Bowling, 1997). Finally individual expression is limited by the parameters of response categories within the fixed-response questionnaire. The triangulation of methods in the current research may however counteract such threats to the validity of the quantitative study, the qualitative study accommodating the disclosure of subjective experience and views.

Qualitative research methods: Rationale, validity and reliability

Again the established rationale for use of the method employed was pertinent to the current investigation. The personal interview accommodates open-ended questions, detailed questioning in the exploration of complex issues, and the acquisition of information of greater depth than may be accessed by the questionnaire method. The investigator is present to probe fully for responses, for clarification when required, and to address misinterpretations or

inconsistencies in the account of the respondent (Bowling, 1997). Regarding reliability and validity, the internal validity, or credibility of the qualitative method is of principal importance. It is proposed that the establishment of credibility or 'truth value' is to be achieved via structural corroboration (Rudestam & Newton, 1992). In the context of the current research which prioritises the subjective view, such structural corroboration is accommodated through the capacity of the personal interview for detailed exploration of the experience and opinion of the participant and through the triangulated approach of the study. The triangulation of methods therefore serviced not only the research objectives but also the validity or credibility of the qualitative study.

The weaknesses of the personal interview method must however be recognised. Primarily, due to the time investment required for data collection and analysis, sample size in a time-limited research project must be restricted, thus convenience sampling is often the only practicable technique (Bell, 1993). Regarding external validity or "fittingness" (Guba & Lincoln, 1981 cited in Rudestam & Newton, 1992) convenience sampling and the use of small samples is common and appropriate to qualitative interviewing (Bell, 1993; Bowling, 1997; Mason, 1996). Nevertheless, limitations are inherent to such sampling technique. The construction of a sample representative of the wider population of interest may not be possible when sample size is small, hence potential for sampling bias exists. Selection bias may also result from use of a volunteer convenience sample which may differ from the wider population in terms of views or experience of the research subject. The current study did not however seek generalisation of the qualitative findings. Despite criticism of qualitative research due to the use of non-representative samples and thus the limited generalisability of results, the value and appropriate use of data generated by qualitative interview is in the enhancement of insight rather than the attainment of representative findings (Bowling, 1997). Congruent with this assertion, the interview-based study pursued in-depth investigation, and

"rich" description of the experience and views of a relatively small population within the context of a specific setting (Rudestam & Newton, 1992), not the generalisation of findings to other scheme populations or settings. It is recognised that the results generated represent a geographically, culturally and socially specific community.

Secondly, the potential for bias in the personal interview situation, virtually impossible to eliminate (Bell, 1993), presents a threat to reliability and validity. Interviewer bias and social desirability bias (Bowling, 1997) pose perhaps the greatest threats in the present investigation, relating to the subconscious influence of the interviewer in line with personal perspectives on the research topic, and the potential tendency of the participant to offer responses perceived to be conducive to this perspective. Although every effort was made to minimise the potential for such bias through the manner in which the interview was conducted, the maximisation of participant input and the minimisation of interviewer input being sought in particular, it is possibly unrealistic to seek to eliminate such sources of bias entirely. Further, in view of the subject matter of the research, mood bias also presents the potential to influence results through the underestimation or overestimation of mental health status or benefit as generated by the exercise on prescription scheme. However, as mood may influence results in both positive and negative directions, the net impact of mood bias may be assumed to be small.

The prioritisation of description and discovery over verification in qualitative research (Rudestam & Newton, 1992) balances to an extent the method-related concerns. For instance, regarding reliability, or "auditability" (Guba & Lincoln, 1981 cited in Rudestam & Newton, 1992), the method of data coding and analysis employed satisfies reliability where consistency is derived through "coding the raw data in ways so that another person could understand the themes and arrive at similar conclusions" (Rudestam & Newton, 1992, pp.38). Nonetheless, the theoretical perspective underlying the current research observes that the test

of grounded theory generated by qualitative study is not the *replicability* of the method utilised, but the extent to which it illuminates the subject of research interest (Secker *et al.*, 1995). It is this potential for illumination, as opposed to replication, for which the qualitative interview method was employed.

4. RESULTS

SECTION ONE : QUANTITATIVE RESULTS

Description of the sample

Respondents were 9 females and 7 males, with a mean age of 56, and a median age of 59.5.

Response rate

16 out of the total population of 25 surveyed responded to the questionnaire, equating to a response rate of 64%.

Presentation of results

Data was graphically and statistically analysed at three levels; collectively, by domain and by opinion statement. The following results are presented in this sequence. Analysis of response to individual statements is presented only when results were of particular interest. The reader *is referred to appendix j, figures 3 to 30 for the detailed graphical and statistical analysis* relating to the results presented here, and to figures 1 and 2 for a guide to interpreting the pareto and boxplot analysis employed.

Corroboration of the findings of Riddoch *et. al.* (1998) (collective level data analysis)

The fundamental finding of Riddoch *et al.* (1998), that exercise on prescription scheme participants accrue a range of psychosocial health benefits, was corroborated. Such mental health promotive outcomes of scheme participation were reported by a significant proportion of the study population. The proportion of response confirming the experience of psychosocial outcomes was 8 times greater than the proportion negating these outcomes (refer to figure 3 for pareto analysis). Moreover, the level of agreement with the findings of Riddoch *et al.* (1998) was consistent across all domains, the median response being 2 (agree), or better (strongly agree) (refer to figure 4 for boxplot analysis).

The extent and nature of mental health outcomes associated with the exercise on prescription scheme (domain level data analysis)

Cognitive effects

The study population strongly and consistently corroborated the findings of Riddoch *et al.* (1998) that exercise on prescription scheme participants gain health and fitness-related knowledge, and perceive that they are taking positive action in relation to their future health whilst also counteracting the effects of ageing.

These cognitive domain opinion statements were most strongly confirmed. Strong agreement with the statements was the most frequently registered response, approximately 85% of responses indicating either strong agreement or agreement versus zero responses disputing the opinion statements (refer to figure 5 for pareto analysis). Further, the boxplot analysis (see figure 6) shows that response was consistent across all 3 opinion statements, with medians of 1 or 2 and a "spread" (represented by the interquartile range) of 1 unit of response. The median response for the cognitive domain overall was 1 (strongly agree) again with a low variance (IQR=1).

Emotional effects

The findings of Riddoch *et al.* (1998) relating to emotional health outcomes of scheme participation were also endorsed. Respondents affirmed that scheme involvement may combat loneliness, become a meaningful part of life, and allow participants to feel cared for and supported by others.

As for the cognitive domain, response to the emotional domain opinion statements was notably positive. 54% of responses reflected endorsement of the opinion statements overall, while just 2% reflected rejection (refer to figure 7 for pareto analysis). Furthermore, respondents were highly consistent in their confirmation of the domain opinion statements,

the interquartile range value of zero illustrating little variance about the median response of 2 (agree) for the domain overall (refer to figure 8 for boxplot analysis).

Although non-response for the emotional effects domain of the questionnaire was relatively high (representing the second highest ranked response category and equating to 40% of response overall, see figure 7) this may largely be accounted for by the proviso attached to one of the three domain opinion statements, namely the necessity to respond to the statement *if* the respondent felt lonely before joining the scheme. The majority of non-response may thus be attributed not to a failure to respond, but to the fact that the statement was inapplicable for a number of respondents.

Psychological and behavioural effects

(The psychological and behavioural effects domains are addressed together, as the following conclusions are equally applicable to results for both domains.)

The findings of Riddoch *et al* (1998), regarding behavioural and psychological outcomes of exercise on prescription scheme participation, overall, were endorsed. It was confirmed that participation promotes self-confidence, self-esteem and a positive outlook on life while reducing stress and anxiety. The finding was corroborated that the enhancement of self-esteem and self-confidence potentially resulting from scheme involvement may enable participants to make life changes. Similarly, it was confirmed that psychological health improvements generated by participation could promote the reduction of health-damaging behaviours further to physical inactivity, such as smoking or poor eating habits. The finding was also endorsed that increased functional ability[9] may be attributed to scheme participation, as may be the promotion of greater independence and in turn the re-attainment of the patient's pre-illness or pre-injury lifestyle.

[9] that is an increased capacity to cope with the activities of daily living.

For both domains, the central tendency of response was to affirm the domain opinion statements; the proportions of response indicating confirmation were 8 times and 3 times greater than the proportion indicating rejection for the psychological and behavioural domains respectively (refer to figures 9 & 10 for pareto analysis). In addition, although there was more inconsistency between response to individual opinion statements, the consistency of the overall domain responses (median response of 2) was relatively high, with a "spread" of 1 unit of response (IQR=1) (refer to figures 11 & 12 for boxplot analysis).

Notably, non-response accounted for the greatest proportion of response overall, equating to 34% and 36% of response for the psychological and behavioural domains respectively (see figures 9 & 10). Although again this may be attributed to the provisos attached to a number of opinion statements, rendering them inapplicable to certain respondents, the reader is referred to the examination of methodological concerns which concludes this section for a more detailed appraisal of potential reasons for non-response.

'Wider' effects

A key conclusion of Riddoch *et al.* (1998) was that exercise on prescription schemes have the potential to generate positive psychosocial outcomes which impact not only upon scheme participants, but also upon members of the wider community, indirectly associated with the scheme. Several of the findings of Riddoch *et al.* (1998) relating to such impacts were affirmed by the current investigation. It was confirmed that the experience of scheme involvement often motivates participants to promote the message that leisure centres are not exclusively for use by those who perceive themselves as 'sporty'. The finding was endorsed that positive personal changes induced by scheme participation in turn have a positive impact within the participant's home environment. There was also support for the finding that friends of participants are encouraged to join the scheme or to exercise. Clearly, evidence of the

"snowball effect", as noted by Riddoch *et al.* (1998), is apparent.

Once more, the graphical and statistical analysis shows a typically positive picture of response. The proportion of response indicating confirmation of the domain statements was almost 3 times greater than the proportion indicating rejection (refer to figure 13 for pareto analysis). Although as for the psychological and behavioural domains, more inconsistency between response to individual opinion statements was apparent, the median response for the domain overall was 2 (indicating agreement with the domain opinion statements), again with a low variance (IQR=1) (refer to figure 14 for boxplot analysis).

Social effects

Regarding the social outcomes of participation, respondents confirmed the findings of Riddoch *et al.* (1998) that exercise on prescription schemes provide an opportunity for social interaction and the forging of new friendships, and enable the sharing of experience and social support among people with similar health problems. Also affirmed was that participants feel a sense of belonging through their membership of the scheme, and perceive the group effort towards the common goal of becoming 'more healthy' as important.

The endorsement of the social domain opinion statements was particularly noteworthy. Approximately 72% of responses indicated either agreement or strong agreement with the statements versus 6% indicating rejection (see figure 15 for pareto analysis). Response was consistent across all 7 opinion statements, with medians of 2 for all and a "spread" (IQR) of 1 unit of response. For the domain overall, the median response was 2 (agree) again with a low variance (see figure 16 for boxplot analysis). Such a positive response is not unusual in the context of results in general. However, for the social effects domain, such positive results are notable due to a 100% response rate.

General effects

The opinion statements within the general effects domain largely represent summary assumptions arising from the statements constituting the main body of the questionnaire. From the response to these summary statements, it was established that the exercise on prescription scheme enhanced the mental well-being, quality of life and happiness of participants. In addition, participants perceived that their involvement in the scheme also resulted in those around them experiencing improved mental well-being. Thus, scheme members affirmed the assumption that the social, behavioural, psychological, emotional, cognitive and wider outcomes of participation equate to enhanced mental well-being, improved quality of life and greater happiness among participants and the wider community.

Again, the proportion of response confirming the domain opinion statements clearly outweighed the proportion negating these assertions, 72% of responses indicating either agreement or strong agreement versus 6% indicating rejection (see figure 17 for pareto analysis). Once more, the central response tendency was to confirm the domain opinion statements (indicated by a median of 2 for the domain overall), however, respondents were highly consistent in endorsing these summary statements. The boxplot analysis (see figure 18) shows that response was so consistent that all responses other than the median were regarded as 'outliers'[10]. This visual illustration of consistent response is quantified by an interquartile range of zero.

Statement level analysis

Results of the analysis of response to individual opinion statements were in a number of instances particularly noteworthy. Most notable was the endorsement of the findings that since joining the scheme, participants promote the message that leisure centres are not for the

[10] that is unusual or extreme values within the data set

exclusive use of those who perceive themselves as 'sporty', and believe that they are taking positive action to counteract the effects of ageing. 100% of responses were affirmative of the associated opinion statements. In both instances, 56% of responses indicated strong agreement with the statement, while 44% indicated agreement (see figures 19 & 20 for pareto analysis). Again, evidence of the "snowball effect" (Riddoch *et al.*, 1998), noted earlier, is apparent. It is encouraging that these findings of Riddoch *et al.* (1998), absolutely corroborated by the study population, equate both to individual and community level mental health promotion.

That participants feel the group effort towards a common goal of becoming 'more healthy' is important, was a finding also strongly corroborated. Approximately 87% of responses indicated either strong agreement or agreement with the associated opinion statement versus zero responses disputing the statement (see figure 21 for pareto analysis).

In their endorsement of the findings that scheme participation provides an opportunity for social contact, and becomes a meaningful part of life, respondents were highly consistent. The boxplot analysis for the associated opinion statements (see figures 22 & 23) shows very low variance (IQR=0) about the median response of 2 (agree) for both statements.

Finally, also strongly endorsed were the summary assertions that participants feel happier, and experience an improved quality of life as a result of participating in the exercise on prescription scheme. Thus, the assumption was again affirmed that the various psychosocial outcomes of scheme participation may translate to the promotion of positive mental health. Approximately 81% and 87% of responses to these respective assertions indicated agreement or strong agreement versus zero indicating rejection (refer to figures 24 & 25 for pareto analysis). Further, respondents were highly consistent in confirming that scheme participation

led to enhanced quality of life, the boxplot analysis (see figure 26) showing very little variance (IQR=0) about the median response of 2 (agree).

Results associated with methodological concerns

The extent of non-response to certain opinion statements was of some concern. For statements 12, 13 and 20, non-response was the highest ranked response category, accounting for 69%, 75% and 75% of responses to the opinion statements respectively (refer to figures 27, 28 & 29 for pareto analysis). In all three cases a conditional 'if' statement rendered non-response appropriate, though all instances of non-response may not have been valid. For example, due to the conditions attached to opinion statements 12 and 13 detailed below, one would expect either a response to both statements, or to neither statement.

'**If you felt depressed before starting the scheme** – Because of participating in the scheme I feel less depressed.'

'**If depression is/was a health problem for you** – In giving me a reason to get out of bed and out of the house, the scheme has helped my depression.'

However, in a number of cases, a response was registered to only one of these statements, perhaps exposing a lack of understanding of the associated directives, and thus a flaw within the questionnaire. Inappropriate non-response was also associated with opinion statement fourteen, detailed here.

'**If you experienced any positive psychological effects of participating in the scheme** – The improvements in my psychological health resulting from my participation in the scheme have led me to reduce health-damaging behaviour (other than physical inactivity) such as smoking or poor eating habits.'

Clearly, the condition attached to the statement necessitates a response, if a positive response was registered for any statement within the preceding psychological effects domain of the questionnaire. Unfortunately, response was not in accordance with this directive, and the overall response of the study group to this opinion statement was notable due to unusually

low consistency. Boxplot analysis (see figure 30), although presenting a positive median of 2 (agree), shows a "spread" of 3 units of response (IQR=3) for the statement. Again, a failure to understand directives is perhaps apparent. The refinement of the questionnaire through more extensive pre-testing may have been necessary in order to improve the clarity and comprehensibility of opinion statements and associated directives.

The rejection of the finding that the partners of participants are encouraged to join the exercise on prescription scheme, or to engage in physical activity, also raises methodological concerns (the pareto analysis in figure 31 illustrates that 56% of responses indicated disagreement or strong disagreement with the associated opinion statement versus 31% indicating agreement or strong agreement). Clearly, the opinion statement is based on the potentially erroneous assumption that all respondents have a partner. Respondents may not, therefore, have rejected the finding per se, but have disagreed with the statement on the basis of not having a partner. Unfortunately, time limitations on the research exercise precluded more extensive pre-testing of the questionnaire, which may have highlighted such statements. The incorporation of a 'not applicable' response option would have accommodated such opinion statements, and equally would have served to differentiate between the two potential categories of non-response within the present results, non-response as representative of the failure to respond to a given statement, or of an appropriate response to an inapplicable opinion statement.

Summary

In sum, methodological issues notwithstanding[11], the questionnaire-based investigation generated results which serve to corroborate the findings of Riddoch *et al.* (1998) from the

[11] Limited methodological comments are offered here as these may not be divorced from the associated result, methodological issues being inherent to the presentation of certain findings. Such comments are also made here for the convenience of the reader and to avoid later repetition; their presentation elsewhere would require the re-statement of a number of individual results and opinion statements. A broader discussion of methodological concerns is offered in chapter five.

participant perspective. Insight into, and development of these encouraging results is provided in the following section, which details the findings of the qualitative element of the current research.

SECTION TWO: QUALITATIVE RESULTS

Results are presented as per the sequence of the interview schedule (see appendix h). Firstly, subjectively defined mental health outcomes of the exercise on prescription scheme are detailed. Secondly, experience of, and opinions on the development of the scheme and its outcomes in relation to mental health promotion theory are outlined.

Description of the sample

Respondents were four males and one female[12], with a mean age of 61.5 years. The average period of participation in the exercise on prescription scheme was 14.5 weeks, the majority having received a repeat prescription for exercise. Respondents principally pursued fitness suite-based activity, attending the leisure facility on two or three occasions per week.

The mental health benefits of exercise on prescription scheme participation

While none reported negative mental health impact, four respondents experienced benefits to mental well-being as a result of scheme participation. Prevalent among the themes that emerged from their accounts was the importance of the scheme's social dimension to mental health gain. The opportunity for social interaction provided was of considerable value, as a means of developing interpersonal relationships and sharing common experiences with others in similar circumstances. Further, this interaction served to facilitate the acceptance of ill-health and the ageing process, illustrated by the following account,

> "The social interaction... removes the feeling of isolation. You know you're not the only one with these health problems. We've all discovered ...we've all got similar trouble now...It's helped to talk about it...we realise we're not the only ones with this advancing ageing...we accept it better then, we look round and see that it's happening to all of us."

[12] The phraseology 'they' as opposed to 'he' or 'she' will be utilised here in order to protect the anonymity of the one female respondent.

In providing such interaction, and a reason to leave the home environment, the scheme was also of value in combating social isolation. One retired respondent explained,

> "I live pretty isolated in the country, so it does help me to come out of the house, because sometimes, if I'm at home, I won't see anybody all day so I do look forward to coming out and mixing socially."

Moreover, the social support associated with the scheme was reciprocal. One respondent, for instance, commented on the support and comfort they had offered a fellow scheme member who had undergone similar surgery and had recently been bereaved.

Mental health benefits of a psychological nature were also consistently reported. The exercise on prescription scheme was, for some, an effective agent of psychological rehabilitation, evidenced here by a respondent who entered the scheme following surgery,

> "...when you've had an operation you're really down...you're flattened ...gradually it has helped me...I've built myself back up...and (I'm) beginning to feel back to normal again."

The following account, of a respondent who likened the impact of their redundancy to that of bereavement, is also testament to the rehabilitative and mental health promotive capacity of the scheme.

> "It has really been a lifesaver for me because it's given me something to look forward to...because I like being with people...this really has benefited me in a lot of ways, making new friends and getting me out of the house...and not thinking about what happened to me."

In addition, scheme participation was beneficial in providing a psychological diversion from negative thoughts and "depressions", enabling mental relaxation, and facilitating recovery from the damaging psychological impact of redundancy for the above respondent.

The physicality integral to the exercise on prescription scheme was of importance for some to the enhancement of mental well-being achieved. The exercise regimen represented "good therapy" as a means of coping with stress, accommodating the physical catharsis of negative feelings and stress-related tension. Further, mental health benefit was also engendered by exercise-related improvements to physical health. For one respondent, the prescribed exercise resulted in improved functional ability and consequently a reformed approach to life, ultimately promotive of mental well-being.

Notably, the fifth respondent denied experiencing mental health benefit as a result of participating in the exercise on prescription scheme. This denial was forwarded with the assertion that they enjoyed sound mental health in terms of the absence of mental illness. The respondent explained,

> "I never have any stress...nothing ever bothers me...I'm alright anyway."

The respondent also claimed not to have derived mental health benefit from the social dimension of the scheme, despite engaging in some social interaction. This account of the failure to experience mental health gain through scheme participation, was in sharp contrast to those proffered by other respondents.

The wider mental health promotive effects of exercise on prescription

Results provided evidence of the community level impact of the exercise on prescription scheme, and insight into the mental health promotive outcomes of this "snowball effect" (Riddoch *et al.*, 1998). Three respondents reported such wider impacts. One noted encouraging a friend to attend the leisure centre, who was subsequently deriving "the benefits" of participation. The two further accounts were particularly illuminating in

depicting the means by which participation may confer a mental health promotive effect within the home environment. For one, the social interaction and enjoyment derived allayed their partner's concerns about the mental health impact of their redundancy. For the following respondent, the scheme was instrumental in improving their functional ability and in turn their quality of life and that of their family.

> "I was withdrawing from life...I couldn't do anything. If I stop, it stops everybody in the family...they say...we can't go out because your dad's poorly, can't do this, can't do that."

Relating the experience of mental health gain through exercise on prescription to mental health promotion theory

Social support

As previously evidenced, reciprocal social support among scheme members was noted by all. Furthermore, there was a high degree of consensus regarding the form of this support; respondents offered conversation, advice and encouragement to new scheme members, and received primarily practical support from leisure centre staff. The tangibility of the support associated with the scheme is illustrated by this respondent,

> "It's a lovely atmosphere in here...it is like a friendly club...rather than ...just a gym."

There was less consensus regarding the importance of this social support to mental well-being, its mental health promotive effect being mediated by personality and personal circumstances. For one, the social support associated with the scheme had no impact on mental well-being. By way of explanation, the respondent admitted to being "a loner" and "not a talker". For another, the social support was highly instrumental in mental health enhancement, having intrinsic value and promoting resilience, as illustrated below.

> "It's general companionship...and friendliness...it's a great thing that is ...very beneficial...the last few months I've had rather a bad personal crisis, and this has certainly helped me."

Proposals for the enhancement of scheme-related social support, taken from the exercise on prescription literature (Lord, 1993; Riddoch *et al.*, 1998), were consistently rejected as inappropriate to personal needs, though respondents acknowledged that greater social support may be of value to others. At the root of this rejection was an emphasis of independence and the need to respect individual wishes and personal agency. For instance, one respondent reported having a full social life rendering further social activity unnecessary and valued the independence to control their exercise and thus the absence of constant staff support. Another emphasised their self-efficacy and independence in exercise while recognising the potential benefits of developing scheme-related social support for those who are "shy" and unused to physical activity. A further respondent noted that participants have the capacity to socialise without facilitation and that involuntary social affiliation may incur damage to mental well-being.

However, despite the rejection of the majority, the mental health promotion potential of certain proposals for scheme development was acknowledged. Respondents consistently accepted the suggestion of additional information-based support. Further proposals were accepted on an individual level only, and thus reflected individual-specific mental health needs. The value of social interaction was reiterated by one as preventative of social isolation, which they noted as a potential cause of depression. Unsurprisingly, this respondent considered organised social activity for participants to be a scheme development with capacity for further mental health promotion. A support network for access following programme completion was also acknowledged as potentially beneficial; by one respondent, as a means of preventing attrition, for another, in continuing support for those with chronic health problems.

Sense of belonging

Three respondents experienced a sense of belonging through participation in the exercise on prescription scheme, and a resultant benefit to mental well-being.

> "When you come, you seem to know the same people, see the same faces."

> "When you see people out in the street they shout...you get a nice welcome when you come in."

The value of this group identity, demonstrated above, lay in the enjoyment of the company of, and social interaction with other scheme members for one participant. For another, the group dimension represented a source of motivation. Moreover, the feeling of affiliation was of considerable intrinsic value, as evidenced here,

> "You feel better, oh crickey, yes...some days you come in and you've really got the blues, and when you've finished and had a bit of a chat... you walk out feeling ten-feet tall."

Such evidence notwithstanding, two respondents denied perceiving this sense of belonging. Once more, individual characteristics and circumstances were the determinants of the mental health promotive effect of scheme involvement, one expressing little desire for social affiliation, another having a full social and working life. The following account demonstrates the marked contrast in responses,

> "You come down as an individual and you do what you've got to do and you go home."

There was a high degree of consensus however, in response to the proposal that a sense of belonging to the scheme could be actively fostered; its rejection as a means of developing the scheme's capacity for mental health promotion was comprehensive. Objections forwarded were a dislike of regimentation, that such scheme development would be personally unimportant, and that a sense of affiliation evolves without facilitation. Again respect for

individual agency and wishes was called for, and the view forwarded that the purposive cultivation of a group identity would be inappropriate and potentially counter-productive to the promotion of mental health.

Self-esteem

Scheme participation engendered a positive influence on the self-esteem of four respondents, being instrumental in enabling its maintenance and improvement. This positive impact was not a result of a simple cause-and-effect relationship, but involved highly personal mediating factors. For two respondents, participation was restorative of self-esteem, reduced as a result of injury, surgery and poor functional ability. For one, the improvement in self-esteem was associated with the return to fitness promoted by participation. For the other, the scheme provided the motivation to become physically and mentally active, which ultimately translated to self-esteem enhancement. The following account illustrates how the scheme enabled a further respondent to protect their self-esteem and mental health by accommodating the maintenance of social contact following redundancy.

> "I think it helped me to maintain my own self-esteem...I could have... gone really down...it probably has improved it as well...I enjoy coming here now and meeting people as I did when I was going to work...so it is a maintenance of self-worth and self-confidence."

For the fourth respondent, the impact on self-esteem promoted by scheme participation was the issue of personal satisfaction, derived from self-efficacy. In contributing to the maintenance of a youthful demeanour, inspiring positive feedback from others, the scheme had also favourably influenced self-esteem.

> "You feel good for yourself that you're able to do all these things, it's great...your bearing and your attitude and your manner is positive and young still."

Coping with stress

For four respondents, the exercise on prescription scheme was of benefit in coping with stress. Participation provided a distraction from stressors, as this respondent explained,

> "It is an outlet...it takes your mind off things that are bothering you."

The scheme was also promotive of resilience against stress. One respondent noted the stress they had experienced as a result of injury and surgery and that the scheme had subsequently enabled them to become "stronger and mentally fitter". Another disclosed that the holistic health gain engendered by participation had enhanced their coping capacity, as their account illustrates,

> "I feel...better in my own health...in my own mind...anything as happens I can cope with."

The value of the physicality inherent to the scheme was reiterated in relation to stress. One respondent again noted the benefit of catharsis, while another recognised the physiological route by which the exercise induced relaxation. The following account exemplifies the experience of stress relief, achieved via the physical dimension of participation,

> "...you feel invigorated, you feel much better in yourself...inside as well as...physically...so it is a stress reliever in that respect."

The fifth respondent however, denied personal experience of stress, and that the scheme could be of stress management value.

> "It's all in the mind that is, whether you cope or not, it's nothing to do with exercise...I cope...there's nothing that troubles me at all...if something crops up, I just carry on and take it as it is."

Surprising in light of the majority view that the scheme was of benefit in coping with stress, was that participation had not enabled the discovery or development of new coping strategies.

Notably, two respondents related that they employed physical activity as a coping mechanism prior to referral to the scheme, one disclosing that exercise had represented a means of "getting on with life", after the death of their spouse.

Self-reliance

Enabled by their participation in the exercise on prescription scheme, three respondents had achieved greater self-reliance. An increase in exercise-related independence was noted by two out of the three, as was enhanced self-reliance in coping with stress. A fourth respondent considered participation to have facilitated the maintenance of independence, both in exercise and stress management.

The two respondents who had experienced enhanced coping ability viewed the scheme as instrumental in this regard in enabling stress management. Their accounts illustrate the efficacy of scheme participation as a coping mechanism.

> "It does help to cope with stress...everyday things build up...whatever walk of life you're in you'll have stress, and by coming down here and working out, it does help."

> "I think you put things into perspective more... just getting you away from the everyday sort of things, and worry about things...you're concentrating on what you're doing...and you're enjoying it, rather than dwelling on...any sort of problems...rather than just sitting there and getting all keyed up even more."

Regarding increased independence in exercise, the experiences of the two respondents noting this scheme outcome were somewhat different. For one, the achievement of greater independence was associated with physical development and an increase in exercise-related self-efficacy. For the second respondent, enhanced self-reliance was the natural result of the progression from a sedentary to an active lifestyle, but was motivated by a potent need to regain functional ability following illness and surgery.

Enhanced mental health as a catalyst for lifestyle change

Although three respondents reported an association between these factors, a simple cause-and-effect relationship did not exist, in every case, between the mental health improvement engendered by the exercise on prescription scheme and lifestyle change. Moreover, the changes attained or facilitated via participation related not to compartmentalised health-related behaviours, but to broader aspects of life.

The mental health impact of scheme participation directly enabled one respondent to effect lifestyle change. Their performance of household tasks and return to functionality was the result of the physical health improvement, and development of the requisite positive mindset, accommodated by scheme participation. The weight training incorporated by the exercise programme, in necessitating the cognitive technique of 'psyching up', had fostered a positive mental attitude transferable to the approach to everyday tasks, applied to effect in achieving lifestyle change.

> "I've started doing jobs around the house...you've got (to) 'psych' yourself up before any task you do...It's made me more independent like that...the weights...that's the thing, that's what 'psychs' you up...it's psychology, mind over matter."

For a second respondent, the lifestyle change associated with scheme involvement also occurred due to a reformed psychological outlook. The synergistic effect of redundancy and the enhancement of psychosocial well-being resulting from participation, precipitated the realisation that "there's more to life than going out to work", and the decision not to return to full-time employment. The respondent explained the effect of this change in lifestyle on their mental health.

> "...people...say, God, you look ten years younger...and I feel great as well, I feel much more invigorated."

This respondent also noted that scheme participation had assisted and promoted specific, health-related behavioural change, in relation to smoking cessation and diet. However this change was not associated with scheme-induced psychological health improvement, but with the practical implications of participation. Scheme involvement represented something of a distraction therapy supportive of smoking cessation, while weight loss was pursued in order to more comfortably meet the demands of the exercise programme.

For a third respondent, although the mental health improvement derived through scheme involvement did not compel lifestyle reform, participation eased the demands of a significant life change, and thus facilitated coping. The respondent explained,

> "I'm going to have a huge change in my lifestyle soon and this has certainly helped me...I'm going through a bad time but it's not as bad as it would have been if I wasn't...coping like this."

<u>The capacity of the exercise on prescription scheme for mental health promotion and the satisfaction of mental health needs</u>

All respondents asserted that the scheme had not failed to meet personal mental health needs within its capacity. By way of explanation, two noted their self-sufficiency in servicing these needs via the independent pursuit of additional activities, however emphasised that other participants may require something further of the scheme. Such self-sufficiency was also demonstrated by a third respondent in stating that they would seek additional provision, if they perceived this would be of benefit. Arguably, these accounts express more about the competence of respondents in asserting and meeting personal mental health needs, than about the scheme's effectiveness in servicing mental health needs within its ambit.

A further respondent defended the physical health focus of the scheme and its assessment protocol. Physical health gain was of innate value, and efficacious in indirectly enhancing the mental health of this respondent, its appraisal influencing mental well-being by evidencing progress and thus promoting a sense of achievement and self-esteem.

> "You see there's been an improvement...that makes you feel better about yourself...pleased with yourself that you've actually achieved...you need to have that, the physical results...you think...I have improved in other aspects...as well as...feeling better about...yourself, you can see the results that it has been all worthwhile."

The augmentation of mental health outcomes via potential scheme reform

Three respondents considered that further benefit to mental well-being could not be generated via scheme reform. Limited activity choice was not viewed as limiting of mental health benefit. The three did not feel they had been "railroaded" by professional dictation, as fitness suite-based exercise was the personal activity choice of each. For instance, one asserted,

> "It's my choice to come...if I was forced to come...I'd think...nobody tells me what to do...I was going (to) come here any rate."

Two respondents considered that scheme provision could be modified to further promote mental health. Notably, the scheme's physical orientation was identified as a possible weakness and the addition to scheme provision of exercise explicitly promotive of mental well-being regarded as a means of generating further mental health benefit. Yoga was forwarded as an appropriate holistic activity, as was the view that many are unaware of the mental health promotive capacity of exercise and thus that the emotional and psychological outcomes of participation require greater advertisement.

Physical activity-related empowerment

All respondents intended to continue exercising on completion of their prescription, regarding

themselves as able to independently pursue an active lifestyle. Their accounts however, indicated that their physical activity-related empowerment was independent of their involvement in the scheme. Three, for instance, had engaged in physical activity prior to referral to the scheme (the exercise history of one encompassing skiing, squash and badminton) while two were pursuing activities independent of scheme participation. The assertion of personal agency was also again present in some accounts. Although the acquisition of exercise-related ability was reported by one, and by another, the possession of the requisite knowledge, support and confidence for activity maintenance, outcomes inherent to the empowerment process, it could not be said that the scheme was responsible for, or associated with, the exercise-related empowerment of the respondent group to any significant degree.

Summational accounts

Summational accounts reflected the significant mental health gains engendered by participation in the exercise on prescription scheme. One related that the improvement to mental well-being experienced was of greater personal significance than the physical health gain attained. The following account provides a synopsis of the mental health benefits realised via scheme involvement.

> "For your own mental well-being it can only be beneficial...I like the social side...it makes you feel good about yourself and your abilities... you're able to do things that you think...'I don't think I could have done that'...It's good for your self-esteem."

However, contrast among these concluding accounts indicated that such experience of mental health gain was not shared by all. Although detailing their isolated perception, one respondent noted,

> "There's nothing I can say...I come down...I'm a lot better than I was and that's it...It's just keeping me fit."

5. DISCUSSION & CONCLUSIONS

Overview of findings in the light of existing research and theory

The present findings indicate that exercise on prescription may play an effective and significant role in the promotion of mental health. The current research has evidenced the capacity of exercise on prescription schemes to generate a range of psychosocial health impacts promotive of mental well-being among scheme participants and the wider community.

The quantitative study, in observing these psychosocial outcomes of participation, corroborated, and validated from a mental health promotion standpoint, the fundamental conclusion of Riddoch *et al.*, (1998) by accessing the subjective experience of referrals. In addition to advancing the knowledge base of this field of research in providing self-report evidence of the role of exercise on prescription in the promotion of mental health, the study yielded findings directive of further investigation which the qualitative research was able to pursue. A key issue for enquiry[13] was the potential for the psychological health improvements achieved through scheme participation to catalyse lifestyle change. Results reflected that the psychological benefits of exercise on prescription may galvanise additional health-related behaviour change, thus confirming this hypothesised association. Respondents also affirmed the related, though more specific finding of Riddoch *et al.*, (1998), that greater self-confidence or self-esteem derived from scheme participation may enable life-change. Further, 'wider' effects were perceived to be engendered by the scheme, encompassing enhanced mental well-being among the wider community. Finally, of surprising significance, was the strength of the consensus that scheme involvement becomes a "meaningful" part of life.

[13] As emphasised by Glenister (1996) for example.

The qualitative investigation provided further insight into these quantitative findings, and the role of exercise on prescription in the promotion of mental health. Arguably, the significance of the mental health improvement experienced by referrals may account for the importance scheme participation assumes in becoming a "meaningful" part of their lives. Regarding the 'wider' effects of participation, insight into their significance and possible sources was offered. Respondents highlighted the capacity of the exercise on prescription scheme to enhance the quality of family life, via the enhancement of their own mental well-being. Particularly illustrative was the account of one participant who perceived the holistic health impact of scheme involvement to have arrested and reversed his 'withdrawal from life' following illness. As his family had been encompassed by this withdrawal, the benefit of the scheme to the individual was instrumental in promoting the well-being and quality of life of the family unit. With respect to exercise on prescription as a means of catalysing health-related behavioural change via psychological health improvement, it was apparent that rather than pursuing discrete change in specific lifestyle behaviours associated with physical health, participants had been facilitated in broad, and perhaps more significant, mental health-related life-change.

To locate these findings within a theoretical context, recourse to both health promotion and mental health promotion theory is appropriate. Returning to the fundamental research question, results indicate that exercise on prescription plays a competent role in the promotion of mental health with reference to criteria for effective mental health promotion endeavour. The scheme is associated with the accommodation, promotion and provision of the 'protective factors' connected with positive mental well-being, respectively, coping skills, good social and family relationships and meaningful activity (Hodgson *et al.*, 1996).

Drawing on the literature reviewed in chapter two, by way of a theoretical synopsis of findings, Antonovsky's salutogenic paradigm (1996), and Putnam's conceptualisation of social capital (1993) proffer useful descriptive constructs and contribute to an understanding of how scheme participation may engender mental health gain. As an agent of mental health promotion, the exercise on prescription scheme proffers two, key salutogenic resources. At the micro level, exercise represents a resource for the promotion of individual mental well-being, enhancing or sustaining self-esteem, coping capacity and self-reliance. At the meso level, the scheme provides a context for developing and accessing social capital, encompassing the four factors associated with Putnam's (1993) conceptualisation of the construct. These factors of *community networks*, *civic engagement* (participation in these networks), local *identity* (including a sense of solidarity among community members) and norms of *trust* and *reciprocal help and support*, may also be closely aligned to key elements of mental health promotion theory outlined in the literature review. The scheme may be seen to represent a 'community network', particularly with respect to the social relationships enjoyed by its members. Participants are actively 'engaged' in this network, and feel a sense of belonging to the scheme community and a sense of solidarity with other participants. Finally, the social interaction between scheme members is characterised by 'reciprocity', mutual support being evident among the exercise on prescription scheme community. To marry this analysis with the relevant theory, the congruity of Joubert & Raeburn's (1998) two-dimensional model of positive mental health promotion with the dual salutogenic resources of exercise and social capital, further illustrates the theoretical validity of exercise on prescription as an agent of mental health promotion. Exercise may be associated with 'individual resilience', and social capital with the notion of a 'supportive environment'. It may thus be concluded from the present findings, that the current role of exercise on prescription in the promotion of mental health is significant from an empirical viewpoint and valid from a theoretical perspective.

Qualification of results, unexpected findings and limitations of the study

Findings relating to the current role of exercise on prescription in the promotion of mental health were positive, thus supporting the proposition that this type of initiative has a capacity for holistic health improvement. However, alternative interpretations of these results must be considered, as must the methodological limitations of the study. Primarily, it is suggested that older individuals may accrue the greatest benefit to mental well-being through physical activity, an assertion applicable to the current research as older age groups dominated the study population[14]. The effect of exercise on subjective well-being, emotion and mood is said to increase with age (Fox, 2000). Further, older exercise participants are seen to enjoy particular mental health gain through membership of an age group in which exercise is less normative while morbidity and mortality are common (Ransford & Palisi, 1996). For such participants, a sense of achievement may be derived through exercise via favourable social comparison, in addition to a perception of reduced vulnerability to illness (Ransford & Palisi, 1996), the net result being the attainment of mental health improvements further to those accessible to younger participants. Finally, the sense of community often associated with regular physical activity, and certainly associated with the exercise on prescription scheme, is recognised as having a particular impact on the quality of life of older people (Fox, 2000). Evidently, an older study population offers the greatest likelihood of favourable results in an investigation such as the current study. The role of exercise on prescription in the mental health promotion of a younger participant group may have been less significant. However, as older individuals constitute the typical exercise on prescription scheme population (Biddle *et al.*, 1994), the present findings should not be regarded as misleading but as potentially representative of the experience of many participants of similar schemes throughout the country.

[14] The mean ages of participants in the quantitative and qualitative studies were 56 years and 61.5 years respectively.

In qualifying these positive findings, reference to methodological issues is necessary. Principally, research participants may have differed from non-participants in their views and experience of the mental health impact of scheme involvement. It may be reasonable to assume that those responding to the questionnaire or volunteering for interview may largely have been those who experienced some benefit to mental well-being as a result of participation in the exercise on prescription scheme. In the light of this potential for selection bias, and the lack of a 100% response rate for either element of the investigation, it must be recognised that the findings represent research participants only, and can not be assumed to be representative of the scheme population as a whole.

Notwithstanding the favourable findings regarding the current role of exercise on prescription in mental health promotion, the qualitative results concerning the development of this role were contrary to expectations based on mental health promotion theory. Firstly, despite lacking an explicit mental health promotive orientation, respondents surprisingly rejected the proposition that the scheme may have failed to meet mental health needs within its ambit. Secondly, theory-led proposals for the augmentation of the scheme's role in mental health promotion, relating to the enhancement of social support and sense of belonging, were rejected due to their irrelevance to the mental health needs of respondents. The proposal that participants could be actively facilitated in accessing the social benefits of scheme involvement was regarded as inappropriate and perhaps somewhat patronising, enabling social affiliation, possibly against individual wishes or needs, being perceived as unnecessary and potentially damaging of mental well-being. The need to respect individuality and personal agency, and thus the autonomy of participants was asserted. Both theoretical and methodological explanations may account for these unanticipated findings.

From a theoretical perspective, it may be suggested that conceptualisations of mental health more closely associated with the absence of mental illness than with a positive state of well-being, underlie the failure to perceive mental health needs that were *not met* and that could have been accommodated by the exercise on prescription scheme. It is widely reported that negative notions of mental 'health' are prevalent (Friedli, 1999; Mauthner *et al.*, 1999; Money, 1996; Secker, 1998), the tendency toward a pathogenic rather than salutogenic focus being characteristic of both professional and lay conceptualisations of mental health (Rogers & Pilgrim, 1997). Similarly, it is noted that mental health has not been successfully affiliated with a concept of positive well-being (Rogers & Pilgrim, 1997). Moreover, the study of lay understandings of mental health and its promotion has indicated that many do not expect to be consistently happy, and consider that to aspire to such a state is unrealistic (Rogers & Pilgrim, 1997). A tendency to be content with a non-optimal state of mental well-being, combined with a negative conceptualisation of mental health, may serve to explain why respondents were content with the mental health benefits gained through scheme involvement, and did not seek further mental health enhancement.

Regarding method-related explanations for these unanticipated findings, the use of a volunteer sample must primarily be considered. Those that volunteered to participate in the research exercise may largely be viewed as those scheme members amenable to discussion of mental health issues and perhaps most able to articulate and address their mental health needs. It may also be assumed that these interview volunteers may have had an existing interest in the topic of enquiry and confidence in asserting their related opinions. From the empirical perspective, the accounts accessed by the qualitative study indicate that research participants were characteristically 'resilient', and arguably 'empowered', being self-sufficient in servicing their mental health needs. Respondents were also assertive of these individual needs and of their personal agency in the promotion of their own mental well-being. Further, interviewees

appeared competent and largely independent in physical activity, clearly a means of enhancing personal mental health. It may be proposed that such a respondent group would not have been generated via random sampling procedure, and that the unexpected results may be linked to the use of a sample most able to identify, articulate and meet their mental health needs. Notably, respondents themselves suggested that others (for instance, less assertive scheme members) may not share their opinions. Secondly, the validity of prospective as opposed to experiential perceptions necessitates consideration. The question of whether the scheme had failed to meet mental health needs could be answered on the basis of direct experience. However, the rejection of theory-led proposals for the development of the scheme's role in mental health promotion was based on postulation. Thus, the perceived efficacy of the suggested scheme developments in generating further mental health benefit may only be regarded as conjectural. In sum, there are grounds on which to suggest that the unexpected findings of the current research must be regarded cautiously.

Also worthy of consideration here is an instance of atypical findings again contrary to expectations, in this case with respect to exercise and mental health promotion theory, and the wider results of the present study. Although representing the experience of one participant only, individual examination is warranted of these findings as a result of their remarkable opposition to theoretical assumptions, and the general experience of the scheme. The strong and consistent rejection by this respondent that his participation in the exercise on prescription scheme had been, or could be associated with mental health impact, was in marked contrast to the accounts of all other respondents, and the results of the previous quantitative investigation. His dismissal, for instance, of social interaction and affiliation as beneficial to mental well-being, and thus that his individual experience and needs did not match theoretical assumptions, demonstrates that exercise and mental health promotion theory is not universally relevant. Individual differences, in presenting the 'exception to the rule', expose a

fundamental weakness of mental health promotion models intended for blanket application; that the 'objective' theory of the academic may be far removed from the subjective needs and experience of the individual. However, an alternative explanation may be drawn from the literature. Research suggests that from a lay perspective, the term 'mental' may be regarded with fear, carrying negative connotations through association with images of mental disorder (Rogers & Pilgrim, 1997). Such insights may serve to explain the negative attitude to the interview of this individual, whose responses, rather than considered reflections on his experience of participation, may have represented hurried dismissals of the issues under discussion, fuelled by an aversion to addressing the notion of mental health.

Finally, regarding exercise and mental health-related empowerment fostered by participation in the exercise on prescription scheme, findings were limited. The extent to which scheme involvement empowered participants to pursue and maintain a physically active lifestyle, and the associated benefits to mental health, was a point of enquiry for the current study. As the quantitative investigation was designed specifically to test the conclusions of Riddoch *et al.* (1998), findings were restricted to the extent and nature of mental health outcomes associated with the scheme. Empowerment was not directly addressed by this element of the research exercise. Nonetheless, the tentative conclusion may be drawn from the results that scheme participation may have contributed to exercise and mental health-related empowerment, outcomes associated with the empowerment process being implicitly fostered. The scheme engendered self-confidence and self-esteem, health and exercise-related knowledge and greater independence through improved functional ability. In addition, participants were provided with a socially supportive exercise environment, and a potentially sustainable mental health promotive resource. To draw a parallel with health promotion literature, the subjective perception of greater personal autonomy and self-esteem along with the development of skills in a supportive environment, are factors associated with empowerment (Naidoo & Wills,

1994). It may then be suggested that the exercise on prescription scheme, with respect to established 'markers' of empowerment, perhaps represented a means of enabling participants to gain greater control of their own health, particularly in relation to mental well-being and exercise. Although the issue of empowerment was, to an extent, directly explored within the qualitative study, findings were again limited. As aforementioned, the nature of the study sample may be regarded as problematic with respect to the exploration of certain issues, among which being empowerment. The accounts of respondents appeared to indicate that the scheme could at best be associated with the maintenance or enhancement of an existing sense of empowerment in relation to exercise and mental health.

General methodological limitations of the research

Prior to forwarding recommendations for future research, current theory and professional practice, general methodological limitations of the present investigation should be noted. The research exercise utilised samples which represented a 'snapshot' of the exercise on prescription scheme and its participants at the time of the study. Stage of progression through the scheme varied with individual participants, potentially spanning 1 to 20 weeks of scheme involvement. Though the contention was observed that psychosocial outcomes of participation are immediate (Buckley *et al.*, 1999), logic may suggest that the information participants provided would have been influenced by the duration of their involvement with the scheme. Notably, a quantitative research participant, new to the programme, reported being unable to respond to certain questions, and unfortunately recorded responses of disagreement rather than the appropriate response of 'not sure / undecided'. Within a small sample, such erroneous negative responses may considerably skew results in the negative direction. However, for the subsequent data analysis, the median was used to characterise central tendency, a measure insensitive to extreme values. Furthermore, the temporal context for the study (dictated by the academic timetable of the supervising institution) was not

optimal. The research was conducted during the summer holiday period when scheme membership is invariably depleted. The study population was therefore small.

It was clear from the quantitative findings that the questionnaire employed in their production required refinement. Further, the size of the population of interest imposed a limitation on the results of the quantitative study. The possible inference that the findings pertaining to the respondent group may also be related to the wider scheme population is problematic due to the small size of this population (n 25). As a 100% response rate was not attained and the respondent group thus represented a fraction (64%) of the population of interest, random sampling error is limiting of such generalisation of results. The expectation for the findings of small-scale research, to "inform, illuminate and provide a basis for policy decisions" (Bell, 1993, pp. 126) and not to permit generalisation, is thus appropriate to the current quantitative results.

For the qualitative investigation, due to the use of convenience sampling yielding a small number of volunteers for interview, the construction of a sample representative of the wider study population as advocated in the research methods literature (Bell, 1993) was not feasible. This was unfortunate as female participants represented 52% of the study population yet constituted only 20% of the sample of interviewees. Sampling bias is therefore evident, the sampling procedure generating a sample unrepresentative of the wider population of interest (Bowling, 1997). In addition, the opportunity to draw a random sample to satisfy generalisability (Bowling, 1997) was not available. However, as the attainment of a representative sample through random selection when the sample size is small is unlikely (Bowling, 1997), and as data from qualitative interviewing is employed to acquire rich insight rather than achieve representative or generalisable findings (Bowling, 1997), use of a small

convenience sample was deemed appropriate. Furthermore, the triangulation of methods may be considered to counter to some degree the methodological problems highlighted here.

Recommendations for further research

From a methodological standpoint, if the qualitative element of the current study was to be replicated, use of random sampling procedure would appear advisable. With respect to the issues of empowerment, the fulfilment of mental health needs by the exercise on prescription scheme and the development of the scheme to maximise mental health outcomes, a random sample of participants may generate results contrasting to those produced by the present research, possibly more representative of the typical exercise on prescription scheme member.

Regarding the development of the exercise on prescription scheme as an agent of positive mental health promotion, the critical conjecture advanced in the literature review could only receive tentative exploration within the parameters of the current investigation. It was proposed that the scheme may generate further benefit to holistic health if a latent capacity for salutogenesis were maximised alongside the adoption of the mental health promotion paradigm. However, this proposition may only be tested through its practical implementation, and the subsequent examination of the direct experience of mental health enhancement through the progressive model of exercise on prescription espoused. It is a matter then for further empirical research, to compare the mental health promotive impact of the current model of exercise on prescription, with that of the salutogenic and holistic model proposed. The randomised controlled trial is a possible means by which to conduct such research. Further, the theoretical paradigm for mental health promotion advanced by Joubert and Raeburn (1998) presents a fitting conceptual framework to guide the implementation of an holistic model of exercise on prescription as a result of its aforementioned congruity with the mental health promotive factors associated with exercise on prescription schemes. A "needs-

led", as opposed to "theory-led" approach however must be recognised as expedient, particularly in the light of the present findings. Appropriate evaluation criteria by which to compare the efficacy in mental health promotion of the existing and proposed models are forwarded by Friedli (1999). Her suggested 'measures of mental well-being', from 'feeling connected' to 'action on positive steps', are relatable to the 'supportive environment' and social capital associated with the scheme, in addition to the 'individual resilience' associated with exercise.

Finally, the present study, in accessing the views and experience of current scheme members, provided insight into the short-term mental health promotive impact of exercise on prescription scheme participation. To extend the evaluation of the role of exercise on prescription in the promotion of mental health, a task for further research is to examine the sustainability of this impact. It is emphasised that evaluative research of mental health promotion must assume a long-term focus (Hodgson *et al.*, 1996) while the lack of investigation of activity maintenance beyond scheme involvement has been noted within the exercise on prescription literature (Riddoch *et al.*, 1998). A fruitful point of enquiry may be the maintenance of mental health gains by those pursuing independent forms of physical activity following scheme completion, compared with those continuing to exercise in a group context in which access to social capital is sustained. The longitudinal study of the role of exercise on prescription in mental health enhancement may make an important contribution to the knowledge base of this field.

Implications for current theory and professional practice

In the light of the findings of the current research, theories forwarded by certain commentators regarding the efficacy of exercise on prescription appear limited and somewhat misleading. The present study has contributed to a growing body of evidence suggesting that

the most significant health improvement impact of exercise on prescription lies within the psychosocial domain (Riddoch *et al.*, 1998; Taylor, 1996), thus illustrating that schemes generate greater health benefit than has previously been recognised. However, some evaluative discourse presents a limited and negative view of scheme outcomes, emphasising that evidence has not been found to justify exercise on prescription initiatives (Chambers *et al.*, 2000). Such discourse has questioned the value of exercise on prescription, as a result of a narrow focus on physical health and activity-related impacts from a biomedical and largely pathogenic perspective (Iliffe *et al.*, 1994). The critique of exercise on prescription proffered by Iliffe *et al.* (1994) is illustrative of the blinkered appraisal predisposed by such a focus. Primarily, a deficit model of illness and dysfunction (Kickbusch, 1996) is propounded as the basis for evaluation, the potential being recognised of physical activity to treat mental disorder and reduce rates of injury and physiological morbidity. The potential of exercise on prescription to promote positive health, and thus the gamut of salutogenic factors (Antonovsky, 1996) associated with physical activity, is not acknowledged. Secondly, the results of randomised controlled trials, considered by these authors to be the optimal means of evaluation, are deemed unencouraging in demonstrating small increases only in physical activity levels. The contention is proffered that resultant improvements in fitness may nevertheless fail to reduce the consequences of disease. That psychosocial benefits of exercise promotive of mental health may be accrued in the absence of fitness improvement (Hillman, 1997) is not recognised, nor is the importance of subjective accounts of the value of exercise on prescription programmes (Riddoch *et al.*, 1998). In a climate of evidence-based practice, the influence of such a critique is of concern. Equally worrying in the light of the current findings, and evidence that the most significant health outcomes of exercise on prescription schemes are psychosocial in nature (Riddoch *et al.*, 1998), is the preoccupation with physiological outcomes within evaluative research. Although justification exists for continued investment in exercise on prescription, the net result may be the underestimation of its health

promotive role and its abandonment as an agent of health promotion, as has been considered by some (Iliffe et al., 1994), apparently on the basis of such limited assessment as outlined here. Arguably, such action would be ill-advised and against the interests of health enhancement. If policy decisions rest on evaluation results representing physical health impacts of exercise on prescription interpreted from a biomedical perspective alone, the health improvement potential of exercise on prescription schemes will not be recognised and such initiatives will receive neither theoretical nor financial support. The implication for exercise on prescription theory, and evaluative research practice, is to assume a salutogenic, holistic perspective, with a particular emphasis on mental health. In this way, the true health promotive impact of exercise on prescription will be recognised both theoretically and empirically, and the potential to develop this promising vehicle for health promotion should be secured.

A further implication for professional practice of results which may imply the salience of psychosocial health outcomes over physical health improvement, is the reassessment of the traditional target group for exercise on prescription. Evidently, those requiring psychosocial health improvement may have more to gain than those seeking improved physical health, though clearly all stand to benefit from mental health enhancement. The greater understanding of the health outcomes of exercise on prescription, to which the current research has contributed, should be put to use in reassessing the appropriateness of exercise referral for the variety of potential target groups. Encouragingly, acknowledgement of more progressive evaluation of exercise on prescription, and recognition of the significance of the mental health outcomes associated with schemes, has been apparent in the area in which the present research was conducted. For the first time in the locality, exercise has been prescribed to a patient group principally seeking benefits of a psychosocial nature, and for whom physicalhealth outcomes will be secondary to mental health gain (Fisher, 2000; North

Staffordshire Directorate of Health Promotion, 2000). In sum, the implication of the current findings for professional practice is the continued, though more appropriate use of exercise on prescription in the promotion of health.

The present findings also carry implications specific to mental health promotion theory and practice, for general observation, and as applied in the development of the role of exercise on prescription in mental health enhancement. Qualitative results indicated that individual needs and wishes may not reflect mental health promotion theory. That the strengthening of social support may *demote* mental health was highlighted, being potentially inappropriate to mental health needs and reflective of a lack of respect for personal agency. Empirically evidenced is the danger of enforcing theoretical assumptions in the belief that they are universally relevant. This danger of inadvertently imposing values on others, particularly with respect to pro-social activity, is also recognised from the theoretical perspective (Mauthner *et al.*, 1999). On the basis of these findings it may be suggested that the 'blanket' application of mental health promotion theory is inappropriate due to individual differences in mental health need, and perceptions of mental health promotive factors. The implication for theory and professional practice is to afford individuality and autonomy greater respect. The importance of a "needs-led" approach to health promotion is widely recognised (Ewles & Simnett, 1995; Naidoo & Wills, 1994; Raeburn & Rootman, 1998), while commentators have championed autonomy in relation to health. Illich (1977) proposed that health is a process of adaptation dependent upon personal autonomy, and that professional intervention, equating to a loss of this fundamental autonomy, should be minimised while individuals must assert personal control over their own health. Autonomy is also salient in the humanist approach to health promotion. From the humanist perspective, health represents a personal goal to which individuals must aspire through their own efforts, human beings possessing the capacity to make reasoned choices and to pursue self-development (Seedhouse, 1986). Regarding the evolution of the role of

exercise on prescription in mental health enhancement, in line with such theories, the conceptualisation of health promotion advanced by Seedhouse (1986) provides an appropriate basis. Seedhouse suggests that health promotion should be concerned with the provision and maintenance of the basic foundations for health, on which individuals may develop themselves. Thus, a mental health promotion initiative should seek to provide and sustain the appropriate conditions for positive mental health, while respecting the personal autonomy of individuals in pursuing mental well-being in the context of these conditions. Again the model of mental health promotion advanced by Joubert and Raeburn (1998) presents a fitting conceptual framework by which exercise on prescription may increase its potential for mental health enhancement. Encompassing an empowerment approach, the role advocated for mental health promotion is one of 'resourcing' a supportive environment in which individuals will be empowered to enhance their personal 'resourcefulness' and 'resilience', and thus their own mental health, in relation to their personal capacity, needs and wishes (Joubert & Raeburn, 1998). Apparent in this model, seen earlier to be amenable to assimilation by exercise on prescription schemes, is a congruity with the implications of the current findings relating to scheme development. Herein perhaps lies the way forward for exercise on prescription in augmenting its role in the promotion of mental health.

Finally, the present findings may indicate that mental health promotion as a discipline must do more to advance a positive conceptualisation of mental well-being, and to promote the perception that a positive state of mental health is attainable. Greater public awareness of the 'realm beyond illness' (Raeburn & Rootman, 1998), of the potential to pursue health beyond the absence of dis-ease (Antonovsky, 1996), must arguably be a goal of mental health promotion. The existence of empirical evidence, including the current findings, to suggest that people do not aspire to a positive state of mental well-being (Rogers & Pilgrim, 1997), but remain content with the absence of mental illness, should fuel the pursuit of this goal.

Conclusions

Although the present research has produced findings to suggest that exercise on prescription may play a significant role in the promotion of mental health, its limitations as an agent of mental health promotion must be recognised. The exercise on prescription scheme may only operate on the micro and meso levels of mental health enhancement, determinants of mental well-being at the macro level are beyond its ambit and influence. The significance of structural determinants of health has been widely acknowledged (Shaw *et al.*, 1999; Townsend & Davidson, 1988; Whitehead, 1988) along with the limitations that structural forces impose on individual or community level health promotion endeavour. It is consequently emphasised in the mental health promotion literature that action at the structural level is fundamental to practice (Edwards, 2000; Health Education Authority, 1997a, 1997b; MacDonald, 1999; Secker, 1998). The cultural, political, social and economic forces which shape mental health are deemed to require "close attention" (Fernando, 1993). The philosophical argument advanced here was that mental health promotion should encourage the pursuit of an optimal state of positive mental well-being. However, the ethics of such practice may be questionable, particularly in the context of an initiative which does not encompass macro level action. With reference to Maslow's (1954) hierarchy of needs, a state of positive mental health may be aligned to the fulfilment of the 'higher level' needs of belonging, self-esteem, and self-actualisation. However, in line with Maslow's theory that 'lower level' physiological and security needs must be satisfied before an individual may achieve self-actualisation, to aspire to a state of positive mental well-being may be unrealistic and thus counterproductive for some members of society. Structural forces, for many, may represent insurmountable obstacles to the attainment of such a state. De Botton (2000) in his overview of the philosophical perspectives of Nietzsche and Schopenhauer in relation to the pursuit of happiness, offers insight. While Shopenhauer proposed that one should not seek an impossible state of contentment and fulfilment, but rather strive to avoid bodily or mental pain, Nietzsche

argued that fulfilment was attainable but dependent on the surmounting of considerable difficulties (de Botton, 2000). As the 'difficulties' structural forces present may be insurmountable obstacles to the attainment of positive mental health for many, it may be argued that a Schopenhauerian perspective represents the more ethical approach for mental health promotion. There is perhaps a danger of demoting mental health, in promoting the unattainable. The implication for exercise on prescription is that the role of schemes in the promotion of mental health is fundamentally limited by the structural determinants of mental well-being. For exercise on prescription to truly fulfil its potential role in mental health promotion, it must operate in a context of broader health promotive endeavour with a capacity to affect the socio-economic determinants of mental health and thus to enable the pursuit of a positive state of mental well-being.

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Appendix a

25.3.99

Dear

Further to our telephone conversation of 25th March, I write to outline the details of my proposed MSc. dissertation project, and to formally request your permission to carry out a further study of the Biddulph GP referral scheme.

On the basis of the positive findings of the evaluations of the Biddulph exercise on prescription scheme that I conducted, regarding the beneficial psychosocial outcomes experienced by many participants, and the current trend in the field to investigate such programme impacts as possibly more significant in effect than improvements to physical health, I wish to study the Biddulph GP referral scheme from a viewpoint of ascertaining, and identifying means of maximizing, the important psychosocial benefits to patients.

I would hope to begin data collection mid-summer and would aim to determine, via a brief questionnaire, the prevalence and nature of the psychosocial outcomes of participation in the programme within the referral group, and to investigate potential means of maximizing such outcomes via qualitative interviews with a small sample of participants.

I feel that the research exercise may be of considerable benefit to the scheme as in my experience referrals both enjoy and gain some motivation from discussing their participation in the programme. The findings of the proposed study may also be of interest and of use to you as the coordinator of the exercise on prescription scheme, for instance regarding the promotion of programme adherence.

I would be most grateful if you could accommodate my research.

Many thanks for your interest in my work,

Yours sincerely

Kate Edwards

Appendix b

STAFFORDSHIRE
moorlands
DISTRICT COUNCIL

Community Services Directorate

R. C. Duncalf, M.C.I.E.H., M.C.I.H., Director of Community Services

Our Ref: ***AB/1517***

Yr. Ref.

Date: 12 April, 1999

Dear Kate

RE: Request to undertake research for Msc project about Exorcise Referral Scheme.

Further to your request to undertake research on the Staffordshire Moorlands G.P. Referral scheme to commence Mid-summer 1999, I am pleased to approve your request as discussed.

Also as indicated in your correspondence I would appreciate you making your findings available to ourselves to help in the future management of the scheme.

Please give me two weeks notice before you intend to start your research so that I can inform the Leisure Centre Staff and perhaps arrange for a desk etc. in the office.

Please contact me with any queries.

Yours sincerely

Leisure Officer

Moorlands House, Stockwell Street, Leek, Staffordshire Moorlands. ST13 6HQ.
Telephone (01538) 483483 Facsimile (01538) 483521 DX 16361 Leek

Appendix c

EXERCISE ON PRESCRIPTION & PSYCHOSOCIAL HEALTH QUESTIONNAIRE

Please answer the following statements by circling the correct response.

1 = strongly agree, **2** = agree, **3** = not sure/undecided, **4** = disagree, **5** = strongly disagree

SOCIAL EFFECTS OF THE EXERCISE ON PRESCRIPTION SCHEME

1) The scheme has given me an opportunity for social contact.	**1**	**2**	**3**	**4**	**5**
2) The scheme has given me the chance to make new friends.	**1**	**2**	**3**	**4**	**5**
3) The scheme has given me the chance to meet people who have a similar health problem.	**1**	**2**	**3**	**4**	**5**
4) I have the chance to share experiences with others on the scheme.	**1**	**2**	**3**	**4**	**5**
5) I get and/or give support and encouragement from/to people in a similar situation.	**1**	**2**	**3**	**4**	**5**
6) I feel a sense of belonging to the group of exercise on prescription patients/to the leisure centre organisation.	**1**	**2**	**3**	**4**	**5**
7) I feel the group effort towards the common goal of becoming more healthy is important.	**1**	**2**	**3**	**4**	**5**

PSYCHOLOGICAL EFFECTS OF THE EXERCISE ON PRESCRIPTION SCHEME

8) Because of participating in the scheme I have a more positive outlook on life.	**1**	**2**	**3**	**4**	**5**
9) Because of participating in the scheme I have more self-confidence. (self-confidence = confidence in yourself and your abilities)	**1**	**2**	**3**	**4**	**5**
10) Because of participating in the scheme I have better self-esteem. (self-esteem = confidence and satisfaction in yourself/self-respect)	**1**	**2**	**3**	**4**	**5**
If you felt stressed or suffered from anxiety before starting the scheme *(if not, please proceed to question 12)* **11)** Because of participating in the scheme I feel less stressed/anxious	**1**	**2**	**3**	**4**	**5**

If you felt depressed before starting the scheme *(if not, please proceed to question 13)*					
12) Because of participating in the scheme I feel less depressed	**1**	**2**	**3**	**4**	**5**
If depression is/was a health problem for you *(if not, please proceed to question 14)*					
13) In giving me a reason to get out of bed and get out of the house, the scheme has helped my depression.	**1**	**2**	**3**	**4**	**5**

BEHAVIOURAL EFFECTS OF THE EXERCISE ON PRESCRIPTION SCHEME

If you experienced any positive psychological effects of participating in the scheme *(if not, please proceed to question 15)*					
14) The improvements in my psychological health resulting from my participation in the scheme have led me to reduce health-damaging behaviour (other than physical inactivity) such as smoking or poor eating habits.	**1**	**2**	**3**	**4**	**5**
15) Because of participating in the scheme I am now more able to cope with the activities of daily living.	**1**	**2**	**3**	**4**	**5**
16) I didn't do so before, but because of the scheme, I now get out of the house on a regular basis.	**1**	**2**	**3**	**4**	**5**
17) The scheme has helped me to become more independent / functional and return to the lifestyle I led before I had health problems.	**1**	**2**	**3**	**4**	**5**
If the scheme has improved your self-confidence or self-esteem *(if not, please proceed to question 19)*					
18) The greater self-confidence / self-esteem I have because of participating in the scheme has helped me to make changes in my life.	**1**	**2**	**3**	**4**	**5**

EMOTIONAL EFFECTS OF THE EXERCISE ON PRESCRIPTION SCHEME

19) I feel looked after and supported by staff and/or other patients.	**1**	**2**	**3**	**4**	**5**
If you felt lonely before joining the scheme *(if not, please proceed to question 21)*					
20) My participation in the scheme has helped me to feel less lonely.	**1**	**2**	**3**	**4**	**5**
21) The scheme has become a meaningful part of my life.	**1**	**2**	**3**	**4**	**5**

WIDER EFFECTS OF THE EXERCISE ON PRESCRIPTION SCHEME

22) Because I participate in the scheme my friends have been encouraged to join the scheme or to exercise.	**1**	**2**	**3**	**4**	**5**
23) Because I participate in the scheme my partner has been encouraged to join the scheme or to exercise.	**1**	**2**	**3**	**4**	**5**
24) Because I participate in the scheme my family has been encouraged to join the scheme or to exercise.	**1**	**2**	**3**	**4**	**5**
25) Since joining the scheme I pass on the message to other people that leisure centres are not just for 'sporty' people but for any one who wants to exercise.	**1**	**2**	**3**	**4**	**5**
26) The positive personal changes I have made because of participating in the scheme (e.g. increasing the exercise you take and your fitness or perhaps improving your diet) have in turn had a positive effect within my family environment.	**1**	**2**	**3**	**4**	**5**

COGNITIVE EFFECTS OF THE EXERCISE ON PRESCRIPTION SCHEME

27) As a result of participating in the scheme I have gained knowledge about my own health and fitness.	**1**	**2**	**3**	**4**	**5**
28) In participating in the scheme I feel that I am doing something positive with my life that helps counteract the effects of getting older.	**1**	**2**	**3**	**4**	**5**
If you have a family history of ill-health and were/are concerned about your own health in the future *(if not, please proceed to question 30)*					
29) The scheme gives me the chance to do something positive about my health and the future.	**1**	**2**	**3**	**4**	**5**

GENERAL EFFECTS OF THE EXERCISE ON PRESCRIPTION SCHEME

30) Overall, my mental well-being has improved as a result of participating in the scheme.	**1**	**2**	**3**	**4**	**5**
31) Overall, I feel that the mental well-being of people around me has improved as a result of my participation in the scheme.	**1**	**2**	**3**	**4**	**5**
32) Overall, I feel happier as a result of participating in the scheme.	**1**	**2**	**3**	**4**	**5**
33) Overall, I feel that my quality of life has improved as a result of my participation in the scheme.	**1**	**2**	**3**	**4**	**5**

DEMOGRAPHICS

34) Are you male or female? (please circle)	**M**	**F**	
35) Which age group do you belong to? (please circle)	**16-24**	**25-34**	**35-44**
	45-54	**55-64**	**65+**
36) Were you attending the fitness suite before you joined the exercise on prescription scheme? (please circle)	**YES**	**NO**	

****

Many thanks for sparing the time to complete this questionnaire, your participation is much appreciated.

Appendix d

BIDDULPH EXERCISE ON PRESCRIPTION SCHEME
DISSERTATION STUDY

Dear Participant,

Please find enclosed a brief questionnaire regarding your experience as a participant of the Biddulph exercise on prescription scheme.

The questionnaire is an important part of the research I am conducting for a dissertation investigating exercise on prescription and mental well-being. The study is being carried out as partial fulfilment of the requirements for my Master's degree in Health Promotion and Health Education at Chester College of the University of Liverpool. Official approval for the research exercise has been granted by Staffordshire Moorlands District Council as a lead agency of the exercise on prescription scheme.

Your participation in this research will provide useful information on this topic and make a significant contribution to the knowledge base of this field. I hope the research will also be of more direct benefit to the participants of the Biddulph exercise on prescription scheme in providing information which may inform the development of the scheme and maximise its potential to enhance mental well-being.

The questionnaire will take approximately 10 minutes to complete. All data from questionnaires are anonymous. Names of participants will not be connected to responses. Completion of the questionnaire is voluntary.

The results of this research will be presented within my dissertation which will be submitted to Chester College for academic assessment. A copy will also be forwarded to Staffordshire Moorlands District Council. A summary of the results of the research will be available in the fitness suite when the study is complete.

I would be most grateful if you could spare a few minutes of your time to complete the questionnaire.

Please return your completed questionnaire, sealed in the envelope provided, to the box in the fitness suite marked 'KATE'S QUESTIONNAIRES' no later than Monday 16th August. When returning your questionnaire, please tick off your name on the list provided or ask a member of staff to do so for you.

Yours sincerely,

Kate Edwards

Appendix e

EXERCISE ON PRESCRIPTION SCHEME MEMBERS

HAVE YOU RECEIVED A QUESTIONNAIRE ABOUT THE EXERCISE ON PRESCRIPTION SCHEME?

IF NOT, PLEASE ASK LYNN OR MARTIN.

THANK YOU.

Appendix f

EXERCISE ON PRESCRIPTION SCHEME MEMBERS

HAVE YOU COMPLETED YOUR QUESTIONNAIRE ABOUT THE EXERCISE ON PRESCRIPTION SCHEME?

IF NOT, PLEASE FILL IT IN AS SOON AS POSSIBLE AND RETURN IT TO LYNN, MARTIN OR TO THE BOX IN THE GYM.

THANK YOU.

Appendix g

BIDDULPH EXERCISE ON PRESCRIPTION SCHEME
DISSERTATION STUDY

Dear Participant,

As a member of the exercise on prescription scheme you will probably be aware of the study I am currently conducting on exercise on prescription and mental well-being, through the questionnaire and information letter you have already received.

The questionnaires were distributed as a general survey of the effects on mental well-being that exercise on prescription scheme participants experience. This survey was the first stage of my research project for a Master's degree in Health Promotion at Chester College of the University of Liverpool. Staffordshire Moorlands District Council, as a lead agency of the scheme, have granted official approval for the research.

The second stage of my research is a short series of interviews which will seek more detailed information regarding the effects on mental well-being of exercise on prescription and the views of participants on how the scheme may be improved or altered to maximise its potential to enhance mental well-being.

Your participation in this research would provide useful information on this topic and make a significant contribution to the knowledge base of this field. I hope the research will also be of more direct benefit to the participants of the Biddulph exercise on prescription scheme in providing information which may inform the development of the scheme in terms of its capacity to promote mental well-being.

I would like to interview 5 members of the exercise on prescription scheme. Each interview will last for approximately 30 minutes and will involve an informal discussion of the issues outlined above. Interviews will be conducted in the private room within the fitness suite as participants may wish to schedule their interview either before or after an exercise session at the leisure centre. Tea and biscuits will be provided. All data obtained will be anonymous. Names of participants will not be connected to information provided. Interviews will be held during the week beginning 23rd August, the day and time to be arranged at the participant's convenience.

If you are willing to participate in an informal interview and are available for half an hour at some time during the week beginning 23rd August, please pass on your name, telephone number and address to a member of staff and I will contact you shortly to arrange an interview.

I would be very grateful if you could spare the time to participate in my study.

Yours sincerely,

Kate Edwards

Appendix h

INTERVIEW SCHEDULE

INTRODUCTION

I'D LIKE US TO TALK ABOUT THE ASPECTS OF YOUR PARTICIPATION IN THE EXERCISE ON PRESCRIPTION SCHEME THAT RELATE TO MENTAL WELL-BEING. I'D LIKE YOU TO TRY TO SAY AS MUCH AS YOU CAN IN YOUR OWN WORDS. THEN, IF YOU'RE UNSURE OF HOW TO RESPOND TO ANYTHING I ASK, I'LL GIVE YOU SOME EXAMPLES. IF THERE'S ANYTHING THAT YOU DON'T UNDERSTAND, PLEASE TELL ME, AND I'LL EXPLAIN MORE FULLY.

FIRST I'D LIKE TO COVER SOME..
BACKGROUND INFORMATION

1) HOW LONG HAVE YOU BEEN ON THE SCHEME?

2) IS THE LEISURE CENTRE THE MAIN VENUE FOR YOUR PRESCRIBED EXERCISE PROGRAMME?
(I.E. DO YOU TAKE ANY OF YOUR PRESCRIBED EXERCISE INDEPENDENTLY, AWAY FROM THE LEISURE CENTRE?)

3) WHAT ARE YOUR MAIN EXERCISE ACTIVITIES?
(GYM, SWIMMING, CLASSES ETC.)

4) HOW MANY TIMES ARE YOU ATTENDING THE LEISURE CENTRE PER WEEK ON AVERAGE AS A MEMBER OF THE SCHEME?

5) WHAT IS YOUR AGE GROUP?
16-24 25-34 35-44 45-54 55-64 65+

I'D NOW LIKE TO GO ON TO LOOK AT...
THE MENTAL HEALTH BENEFITS OF THE EXERCISE ON PRESCRIPTION SCHEME

6) COULD YOU TELL ME ABOUT THE IMPACTS OF THE SCHEME YOU'VE EXPERIENCED WHICH YOU FEEL HAVE AFFECTED YOUR MENTAL WELL-BEING

THESE MAY BE,

PSYCHOLOGICAL	(DISTRACTION FROM WORRIES/IMPROVED SELF-CONFIDENCE/REDUCED STRESS, ANXIETY, DEPRESSION)
SOCIAL	(MEETING PEOPLE, MAKING FRIENDS)
EMOTIONAL	(FEELING MORE POSITIVE/LESS TENSE)
INTELLECTUAL	(GAINED KNOWLEDGE ABOUT OWN HEALTH & FITNESS)

NOW I'D LIKE TO GO ON TO LOOK AT...
THE WIDER IMPACTS OF THE SCHEME

7) COULD YOU TELL ME IF YOUR PARTICIPATION IN THE SCHEME HAS HAD ANY EFFECTS ON THE MENTAL WELL-BEING OF PEOPLE AROUND YOU

(FOR INSTANCE FRIENDS, FAMILY, WORK COLLEAGUES)

PLEASE DESCRIBE THESE EFFECTS

(E.G. FRIENDS HAVE BEEN ENCOURAGED TO EXERCISE, FAMILY HAVE BEEN HAPPY ABOUT THE IMPROVEMENT IN YOUR WELL-BEING, SO THERE HAS BEEN A POSITIVE EFFECT IN YOUR HOME ENVIRONMENT)

8) OF THE EFFECTS OF THE SCHEME ON YOURSELF AND OTHERS THAT WE'VE DISCUSSED, WHICH WERE / WHICH WAS THE MOST IMPORTANT IN INFLUENCING YOUR MENTAL WELL-BEING?

9) WHY WAS THAT SO IMPORTANT TO YOUR MENTAL WELL-BEING?

10) WERE THERE ANY WAYS IN WHICH THE SCHEME NEGATIVELY AFFECTED YOUR MENTAL WELL-BEING?

(E.G. SOME PEOPLE FEEL SELF-CONSCIOUS, EMBARASSED OR STRESSED WHEN EXERCISING IN THE COMPANY OF OTHER PEOPLE)

THE RELEVANCE OF THEORY

NOW I'M GOING TO DRAW ON SOME OF THE THEORY OF MENTAL HEALTH PROMOTION. I'D LIKE US TO CONSIDER IF THE THEORY IS RELEVANT TO WHAT YOU'VE EXPERIENCED, AND WAYS THE SCHEME MIGHT IMPROVE ITS POTENTIAL TO ENHANCE MENTAL WELL-BEING.

11) **SOCIAL SUPPORT & BUILDING SOCIAL NETWORKS**

SOCIAL SUPPORT IS SAID TO BE IMPORTANT FOR MENTAL HEALTH AND TO HELP PEOPLE START AND CONTINUE EXERCISING

(SOCIAL SUPPORT BEING EITHER PRACTICAL OR EMOTIONAL SUPPORT FROM OTHER PEOPLE INVOVED IN THE SCHEME, STAFF OR OTHER SCHEME MEMBERS)

A) HAVE YOU RECEIVED OR GIVEN SOCIAL SUPPORT WHILE ON THE SCHEME?

B) IN WHAT FORM?

C) HAS THIS SUPPORT BEEN OF BENEFIT TO YOUR MENTAL WELL-BEING & WHY?

D) DO YOU THINK THE SCHEME COULD FURTHER DEVELOP SOCIAL SUPPORT FOR PARTICIPANTS TO IMPROVE THEIR MENTAL WELL-BEING? (E.G. USING A 'BUDDY SYSTEM', MORE ENCOURAGEMENT FROM STAFF)

E) HOW COULD THIS BE DONE?

F) WOULD YOU AGREE / DISAGREE THAT THE FOLLOWING SUGGESTIONS ARE USEFUL/APPROPRIATE?

- ORGANISING SOCIAL EVENTS ON A REGULAR BASIS FOR SCHEME PARTICIPANTS (E.G. CHRISTMAS LUNCH OUTING)
- GOING FOR REFRESHMENTS TOGETHER AFTER EXERCISE
- DELAY START TIMES SO A LOT OF PARTICIPANTS BEGIN THE PROGRAMME TOGETHER
- PRODUCE A NEWSLETTER TO BE CIRCULATED TO ALL PARTCIPANTS
- SETTING UP A SUPPORT NETWORK TO OFFER PERSONAL CONTACT AND SUPPORT DURING & BEYOND THE REFERRAL PROGRAMME

12) **SENSE OF BELONGING OR GROUP IDENTITY**

IS ALSO SAID TO BE IMPORTANT TO MENTAL HEALTH

A) HAVE YOU FELT A SENSE OF IDENTITY WITH OR BELONGING TO THE GROUP OF SCHEME MEMBERS?

B) HAS THIS BEEN OF BENEFIT TO YOUR MENTAL WELL-BEING & IF SO, WHY?

C) DO YOU THINK THE SCHEME COULD FURTHER DEVELOP A SENSE OF GROUP IDENTITY FOR MEMBERS TO IMPROVE THEIR MENTAL WELL-BEING?

D) HOW COULD THIS BE DONE?
(E.G. SCHEME 'T' SHIRTS)

13) **COPING SKILLS – KNOWLEDGE OF WAYS OF COPING (ESPECIALLY WITH STRESS)**

A) HAS PARTICIPATING IN THE SCHEME ENABLED YOU TO COPE BETTER WITH ANY STRESS IN YOUR LIFE?

B) HAS THE SCHEME HELPED YOU TO DISCOVER OR DEVELOP ANY NEW COPING STRATEGIES?

(E.G. 1. EXERCISE, CONTACT WITH FRIENDS, & INVOLVEMENT IN AN ACTIVITY, ARE SAID TO BE EFFECTIVE WAYS OF COPING - HAVE ANY OF THESE ASPECTS OF THE SCHEME HELPED YOU TO COPE WITH DIFFICULTIES/STRESS?)

(E.G. 2. INFORMATION ON THE USE OF THE SCHEME TO COPE WITH STRESS FOR INSTANCE USING EXERCISE AS A RELAXATION TECHNIQUE)

14) **SELF-ESTEEM (BEING)**

A) HAS PARTICIPATING IN THE SCHEME IMPROVED YOUR SELF-ESTEEM?
SELF ESTEEM = CONFIDENCE & SATISFACTION IN YOURSELF / SELF-RESPECT

B) COULD YOU EXPLAIN HOW & WHY?

15) **BECOMING**

DO YOU FEEL THAT YOUR PARTICIPATION IN THE SCHEME HAS HELPED YOU TO BECOME MORE INDEPENDENT / SELF-RELIANT?

A) REGARDING YOUR PHYSICAL ACTIVITY?

B) COPING WITH STRESS?

16) HAVE THE BENEFITS TO YOUR MENTAL WELL-BEING THAT YOU'VE EXPERIENCED ON THE SCHEME HELPED YOU, OR LED YOU, TO MAKE ANY CHANGES TO YOUR LIFESTYLE?

(E.G LADY GOING FROM WATCHING T.V.ON THE SETEE, TO HAVING CONFIDENCE TO TACKLE HER GARDEN / E.G. MOTIVATED TO STOP SMOKING OR CHANGE YOUE DIET)

17) ARE THERE ANY MENTAL HEALTH NEEDS (SOCIAL, EMOTIONAL, PSYCHOLOGICAL) THAT YOU THINK PARTICIPATING IN THE SCHEME COULD HAVE MET, BUT ACTUALLY HASN'T?

(E.G. SUGGESTED ABOUT A SCHEME IN THE SOUTH OF ENGLAND THAT THE SOCIAL SIDE COULD HAVE BEEN DEVELOPED MORE)

18) ARE THERE ANY WAYS YOU FEEL THE SCHEME COULD BE ALTERED SO THAT YOU WOULD GAIN MORE BENEFIT IN TERMS OF MENTAL WELL-BEING?

(E.G. CHOICE, OPPORTUNITIES TO EXERCISE INDOORS)

19) DO YOU FEEL ABLE TO CONTINUE EXERCISING INDEPENDENTLY OF THE SCHEME WHEN YOUR PROGRAMME IS COMPLETED?

(I.E. HAVE YOU GOT ADEQUATE KNOWLEDGE OF EXERCISE, OF THE FACILITIES/OPPORTUNITIES AVAILABLE, ENOUGH SUPPORT AND CONFIDENCE?)

SUMMARY COMMENTS

THAT'S THE MAIN PART OF THE DISCUSSION DONE NOW.
BEFORE WE FINISH,

20) IS THERE ANYTHING ELSE YOU'D LIKE TO ADD ON THE SUBJECT OF THE SCHEME AND MENTAL WELL BEING?

ANY MORE SUGGESTIONS FOR IMPROVEMENTS TO THE SCHEME?

OR ANY MORE GENERAL COMMENTS YOU'D LIKE TO MAKE?

21) ARE THERE ANY QUESTIONS YOU'D LIKE TO ASK ME ABOUT THE SUBJECTS WE'VE DISCUSSED OR MY RESEARCH PROJECT IN GENERAL?

CONCLUSION & THANKS

Appendix i

BIDDULPH EXERCISE ON PRESCRIPTION SCHEME
DISSERTATION STUDY

Thank you for volunteering to participate in the Biddulph exercise on prescription scheme study. The research is being conducted as a requirement of my Master's degree in Health Promotion at Chester College of the University of Liverpool. Staffordshire Moorlands District Council, as a lead agency of the exercise on prescription scheme, has granted official approval for the research.

Your participation in this research will provide useful information on the topic of exercise on prescription and the promotion of mental health and make a significant contribution to the knowledge base of this field. I hope the research will also be of more direct benefit to the participants of the Biddulph exercise on prescription scheme in providing information which may inform the development of the scheme and maximise its potential to enhance mental well-being.

The interview will last for approximately 30 minutes, and will take the form of an informal discussion. The first part of the discussion will cover the benefits to mental well-being you may have experienced as a result of participating in the exercise on prescription scheme. The second part of the discussion will cover ways in which the scheme may be developed to maximise its capacity to promote mental well-being.

The interview will be audio tape-recorded if you have no objection. Resulting data will be anonymous. Names of participants will not be connected to information provided.

The results of this research will be presented within my dissertation for a Master's degree in Health Promotion which will be submitted to Chester College for academic assessment. A copy will also be forwarded to Staffordshire Moorlands District Council. A summary of the results of the research will be available in the fitness suite when the study is complete.

Many thanks once again for sparing the time to participate in this study.

Kate Edwards

Appendix j

Graphical and statistical analysis of results of the questionnaire-based investigation

The following figures present graphical and statistical data analysis relating to the quantitative results outlined in chapter 4, section 1.

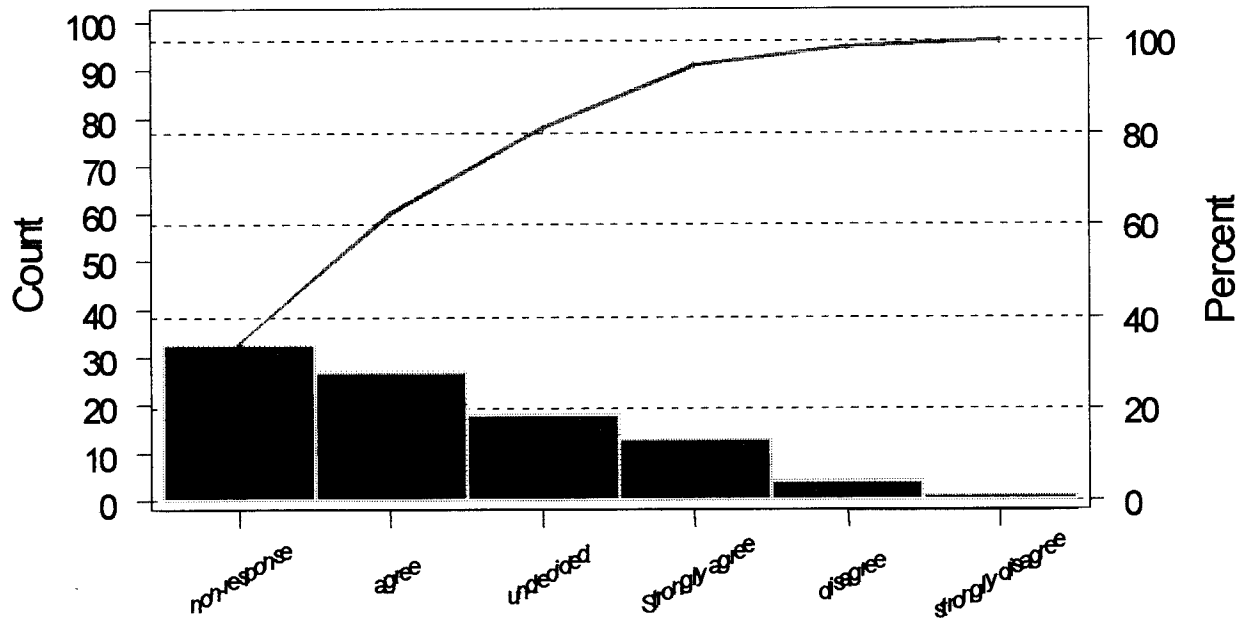
Below is a brief introduction to the interpretation of the analysis conducted.

Pareto analysis

As illustrated in the example in figure 1 below, the pareto chart presents response categories in descending order of importance described by proportions, thus demonstrating the relative importance of response categories.

Of fundamental interest to the current investigation was the relative importance of the 'agree'/'strongly agree' and 'disagree'/'strongly disagree' response categories in quantifying the extent to which the findings of Riddoch *et al.* (1998) were corroborated. The nature of the mental health promotive outcomes experienced, and their relative importance, was indicated by the level of corroboration across domains and individual opinion statements.

Fig. 1 Pareto chart of psychological domain responses by response category



	non-response	agree	undecided	strongly agree	disagree	strongly disagree
Count	33	27	18	13	4	1
Percent	34.4	28.1	18.7	13.5	4.2	1.0
Cum %	34.4	62.5	81.2	94.8	99.0	100.0

Response Category

Frequency analysis

As illustrated in the example in figure 2 below, the boxplot provides a graphical illustration of the median, the extent of variance and extreme values within the data set. The 'box' represents the interquartile range, which equates to approximately the central 50% of the data (MINITAB Help Glossary, 1996). The lines or 'whiskers' extending to either side of the box indicate the extent of the data (MINITAB Help Glossary, 1996); in the current research the "spread" of response across the five possible response options. The box bottom is positioned at the 1st quartile or 25th percentile, and the box top at the 3rd quartile or 75th percentile (MINITAB Help Glossary, 1996). The median value is indicated by a horizontal line, which may be marked inside the box. However, the median value may be equal to the 1st or 3rd quartile value, thus the median value would be indicated by a horizontal line positioned at either the box bottom or box top. Evidently, in this instance the median value is visually indiscernible, therefore the reader is referred to the descriptive statistics which accompany the boxplot. Outliers, or extreme values, which extend beyond the whiskers, are marked by an asterisk.

In the current study, the median was used to quantify the central response tendency, as it is less influenced by extreme values in a distribution than the mean. The interquartile range was used to quantify the consistency of response, due to the discrete nature of the response.

Fig. 2 Boxplot of scores for group X subjects

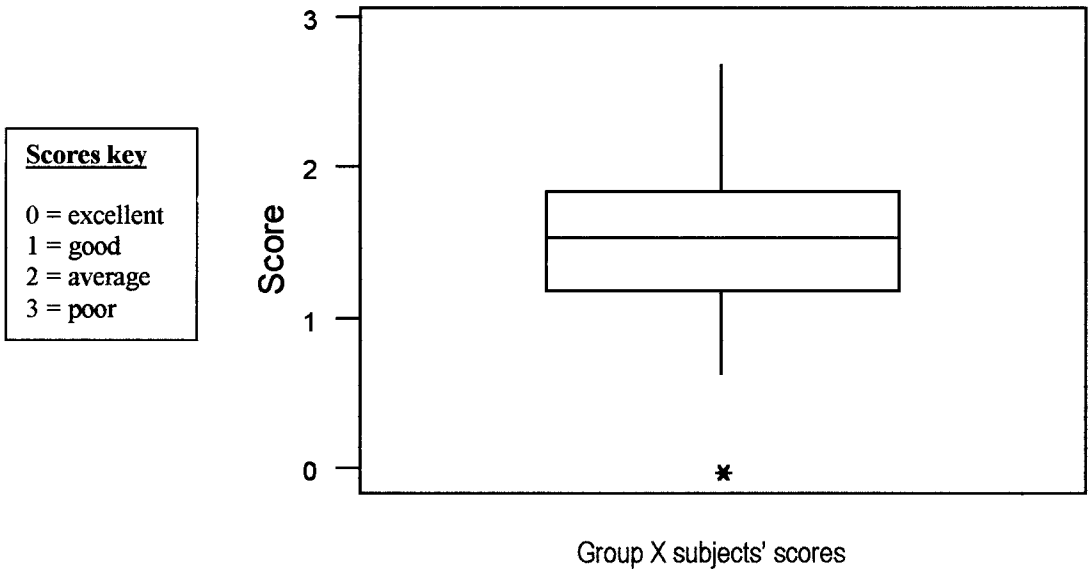


Fig. 2 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Group X	100	1.5255	-0.0308	2.6788	1.1715	1.8375	0.6660

Note

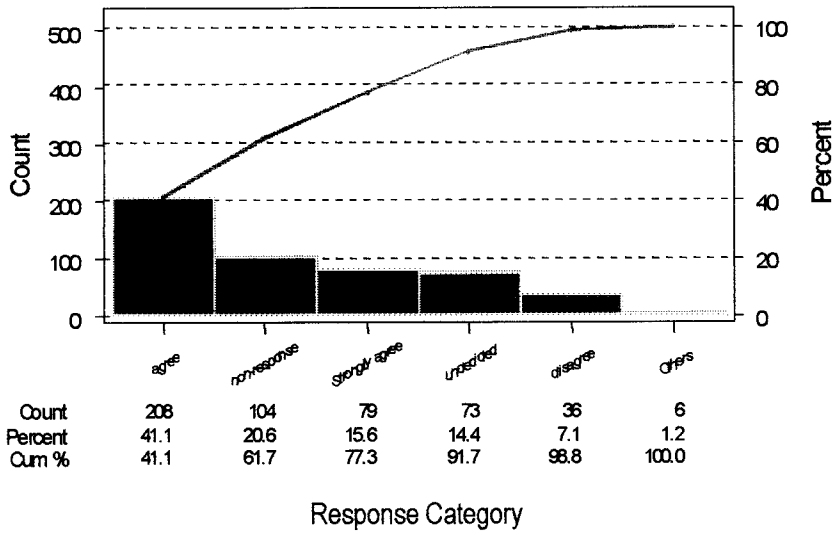
Frequency analysis of the results of the current quantitative study does not accommodate non-response. The data thus relate only to the questionnaire response options, and apply only to the proportion of respondents who registered a response to the relevant statement(s).

Reference

MINITAB Release 11.2 (1996) MINITAB Help, Glossary. Minitab Inc.

Corroboration of the findings of Riddoch *et al.* (1998) from the participant perspective (Collective level data analysis)

Fig. 3 Pareto chart of collated responses for all domains



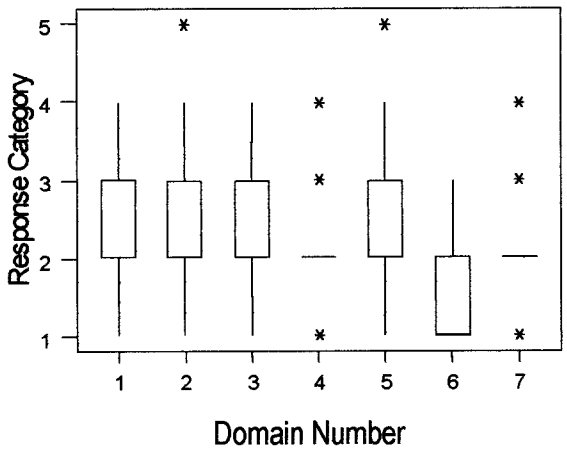
	agree	non-response	strongly agree	undecided	disagree	others
Count	208	104	79	73	36	6
Percent	41.1	20.6	15.6	14.4	7.1	1.2
Cum %	41.1	61.7	77.3	91.7	98.8	100.0

Response Category

Fig. 4 Boxplot of frequency of response, by domain, for all domains

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree
5 = strongly disagree



Domain number Key

1 = social domain
2 = psychological domain
3 = behavioural domain
4 = emotional domain
5 = wider effects domain
6 = cognitive domain
7 = general effects domain

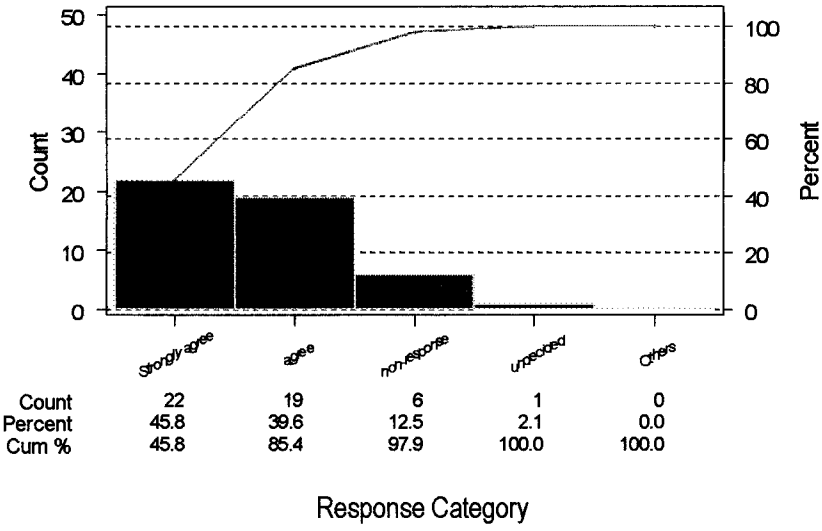
Fig.4 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Social Domain (1)	110	2.000	1.000	4.000	2.000	3.000	1.000
Psychological Domain (2)	063	2.000	1.000	5.000	2.000	3.000	1.000
Behavioural Domain (3)	051	2.000	1.000	4.000	2.000	3.000	1.000
Emotional Domain (4)	029	2.000	1.000	4.000	2.000	2.000	0.000
Wider Domain (5)	072	2.000	1.000	5.000	2.000	3.000	1.000
Cognitive Domain (6)	042	1.000	1.000	3.000	1.000	2.000	1.000
General Domain (7)	055	2.000	1.000	4.000	2.000	2.000	0.000
All Domains	422	2.000	1.000	5.000	2.000	3.000	1.000

(Refer to chapter 4, section 1, page 30, for interpretation)

The extent and nature of mental health outcomes associated with the exercise on prescription scheme (domain level data analysis)

Fig. 5 Pareto chart of responses for the cognitive effects domain



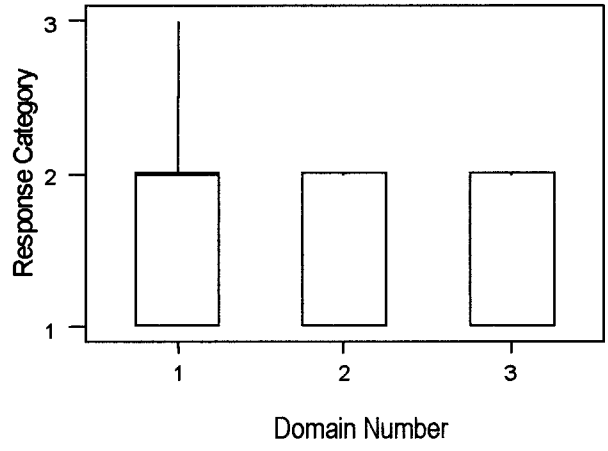
Count	22	19	6	1	0
Percent	45.8	39.6	12.5	2.1	0.0
Cum %	45.8	85.4	97.9	100.0	100.0

Response Category

Fig. 6 Boxplot of frequency of response for the cognitive effects domain

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided



Statement number Key

1 – relates to statement 27 of questionnaire
2 – relates to statement 28 of questionnaire
3 – relates to statement 29 of questionnaire

Fig. 6 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Statement 27 (1)	16	2.000	1.000	3.000	1.000	2.000	1.000
Statement 28 (2)	16	1.000	1.000	2.000	1.000	2.000	1.000
Statement 29 (3)	10	1.000	1.000	2.000	1.000	2.000	1.000
Cognitive Domain	42	1.000	1.000	3.000	1.000	2.000	1.000

(Refer to chapter 4, section 1, page 31, for interpretation)

Fig 7 Pareto chart of responses for the emotional effects domain

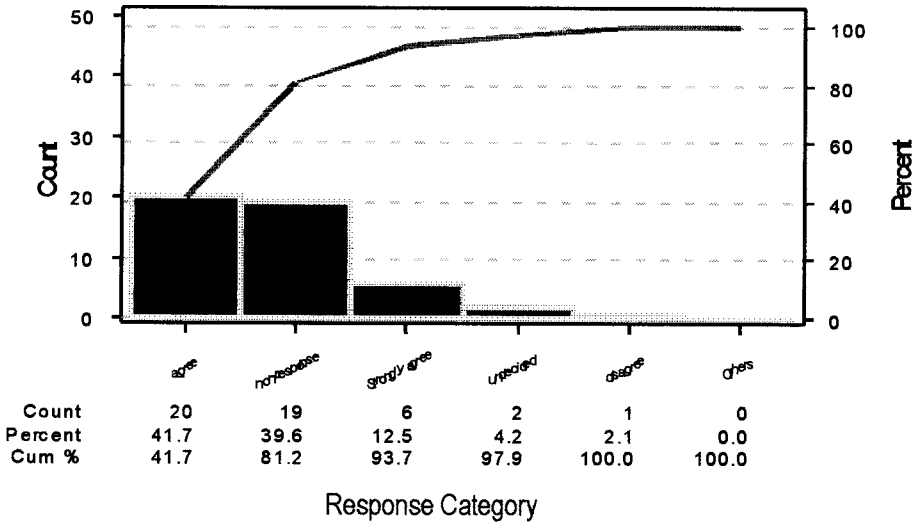


Fig. 8 Boxplot of frequency of response for the emotional effects domain

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree

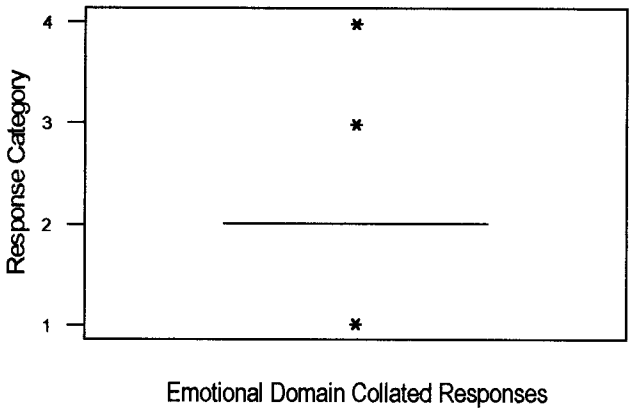


Fig. 8 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Emotional Domain	29	2.000	1.000	4.000	2.000	2.000	0.000

(Refer to chapter 4, section 1, pages 31 and 32, for interpretation)

Fig. 9 Pareto chart of responses for the psychological effects domain

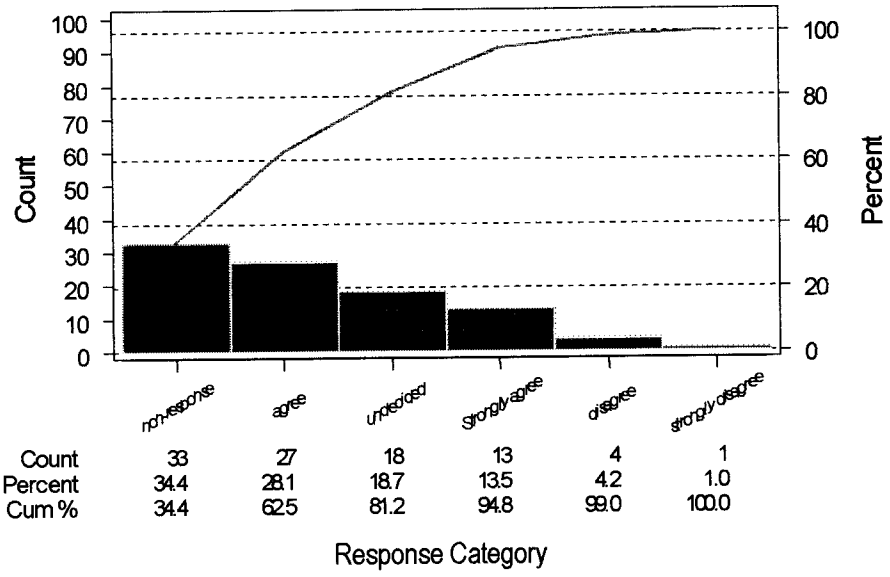
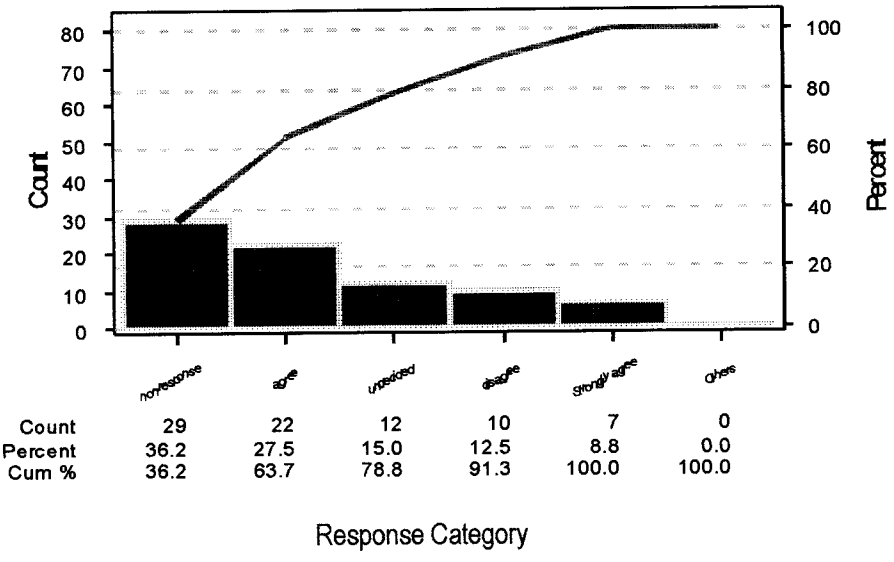


Fig. 10 Pareto chart of responses for the behavioural effects domain

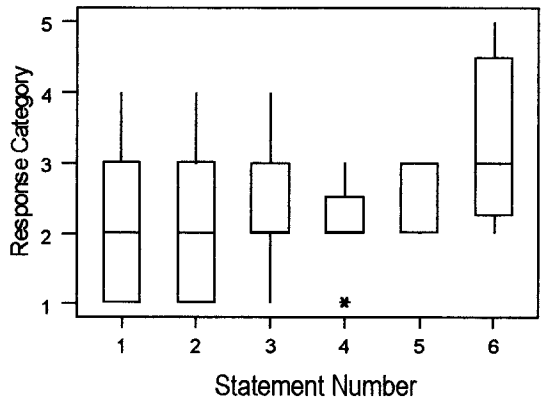


(Refer to chapter 4, section 1, page 33, for interpretation)

Fig. 11 Boxplot of frequency of response for the psychological effects domain

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree
5 = strongly disagree



Statement number Key

1 – relates to statement 8 of questionnaire
2 – relates to statement 9 of questionnaire
3 – relates to statement 10 of questionnaire
4 – relates to statement 11 of questionnaire
5 – relates to statement 12 of questionnaire
6 – relates to statement 13 of questionnaire

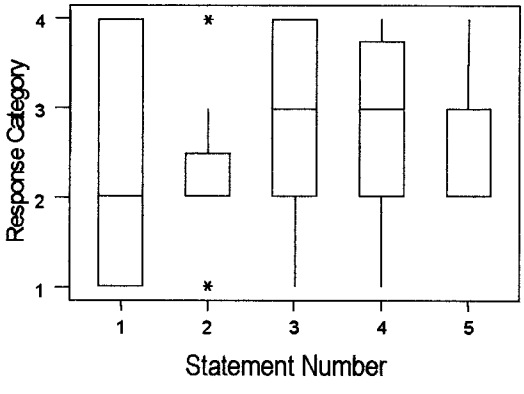
Fig. 11 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Statement 8 (1)	15	2.000	1.000	4.000	1.000	3.000	2.000
Statement 9 (2)	15	2.000	1.000	4.000	1.000	3.000	2.000
Statement 10 (3)	15	2.000	1.000	4.000	2.000	3.000	1.000
Statement 11 (4)	09	2.000	1.000	3.000	2.000	2.500	0.500
Statement 12 (5)	05	3.000	2.000	3.000	2.000	3.000	1.000
Statement 13 (6)	04	3.000	2.000	5.000	2.250	4.500	2.250
Psychological Domain	63	2.000	1.000	5.000	2.000	3.000	1.000

Fig. 12 Boxplot of frequency of response for the behavioural effects domain

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree



Statement number Key

1 – relates to statement 14 of questionnaire
2 – relates to statement 15 of questionnaire
3 – relates to statement 16 of questionnaire
4 – relates to statement 17 of questionnaire
5 – relates to statement 18 of questionnaire

Fig. 12 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR	
Statement 14 (1)	07	2.000		1.000	4.000	1.000	4.000	3.000
Statement 15 (2)	13	2.000		1.000	4.000	2.000	2.500	0.500
Statement 16 (3)	10	3.000		1.000	4.000	2.000	4.000	2.000
Statement 17 (4)	12	3.000		1.000	4.000	2.000	3.750	1.750
Statement 18 (5)	09	2.000		2.000	4.000	2.000	3.000	1.000
Behavioural Domain	51	2.000		1.000	4.000	2.000	3.000	1.000

(Refer to chapter 4, section 1, page 33, for interpretation)

Fig. 13 Pareto chart of responses for the wider effects domain

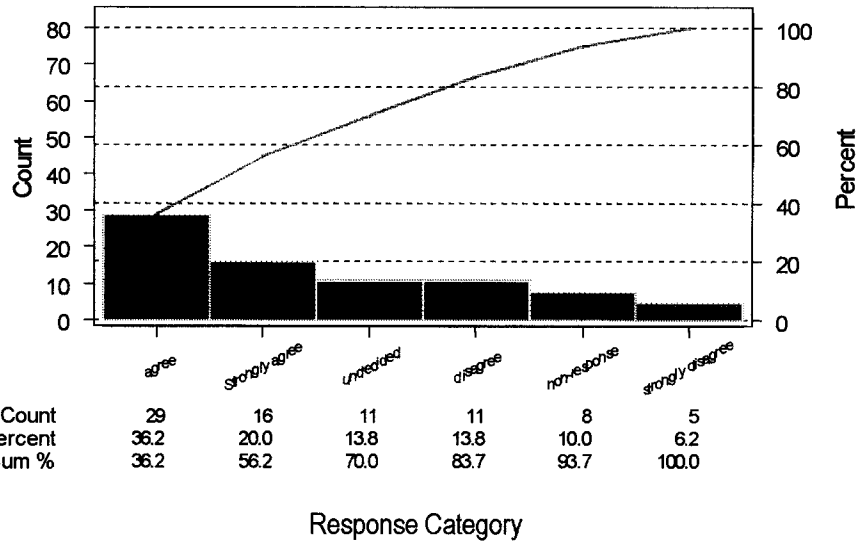
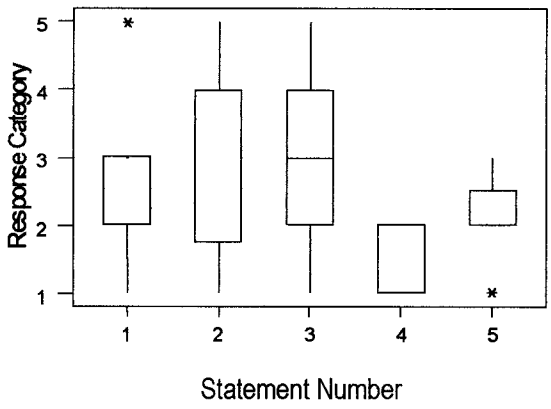


Fig. 14 Boxplot of frequency of response for the wider effects domain

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree
5 = strongly disagree



Statement no. Key

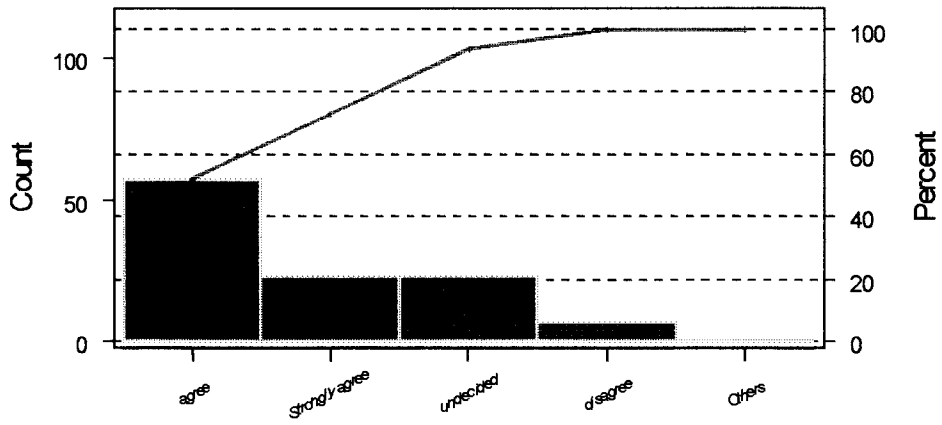
1 – relates to statement 22 of questionnaire
2 – relates to statement 23 of questionnaire
3 – relates to statement 24 of questionnaire
4 – relates to statement 25 of questionnaire
5 – relates to statement 26 of questionnaire

Fig. 14 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Statement 22 (1)	15	2.000	1.000	5.000	2.000	3.000	1.000
Statement 23 (2)	14	4.000	1.000	5.000	1.750	4.000	2.250
Statement 24 (3)	14	3.000	1.000	5.000	2.000	4.000	2.000
Statement 25 (4)	16	1.000	1.000	2.000	1.000	2.000	1.000
Statement 26 (5)	13	2.000	1.000	3.000	2.000	2.500	0.500
Wider Effects Domain	72	2.000	1.000	5.000	2.000	3.000	1.000

(Refer to chapter 4, section 1, page 34, for interpretation)

Fig. 15 Pareto chart of responses for the social effects domain



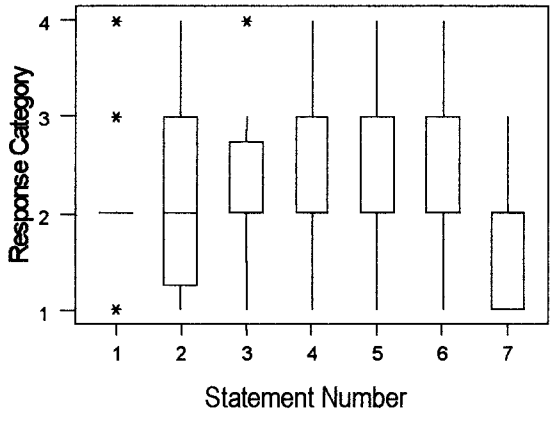
Count	57	23	23	7	0
Percent	51.8	20.9	20.9	6.4	0.0
Cum %	51.8	72.7	93.6	100.0	100.0

Response Category

Fig. 16 Boxplot of frequency of response for the social effects domain

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree



Statement Number Key

1 – relates to statement 1 of questionnaire
2 – relates to statement 2 of questionnaire
3 – relates to statement 3 of questionnaire
4 – relates to statement 4 of questionnaire
5 – relates to statement 5 of questionnaire
6 – relates to statement 6 of questionnaire
7 – relates to statement 7 of questionnaire

Fig. 16 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Statement 1	16	2.000	1.000	4.000	2.000	2.000	0.000
Statement 2	16	2.000	1.000	4.000	1.250	3.000	1.750
Statement 3	16	2.000	1.000	4.000	2.000	2.750	0.750
Statement 4	16	2.000	1.000	4.000	2.000	3.000	1.000
Statement 5	15	2.000	1.000	4.000	2.000	3.000	1.000
Statement 6	15	2.000	1.000	4.000	2.000	3.000	1.000
Statement 7	16	2.000	1.000	3.000	1.000	2.000	1.000
Social Domain	110	2.000	1.000	4.000	2.000	3.000	1.000

(Refer to chapter 4, section 1, page 34, for interpretation)

Fig. 17 Pareto chart of responses for the general effects domain

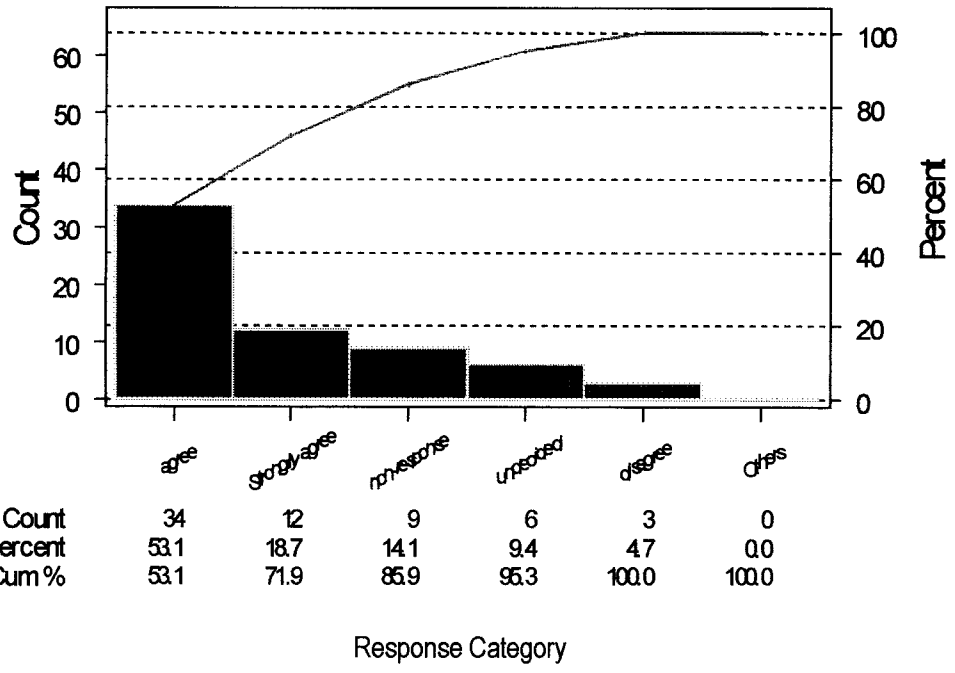


Fig. 18 Boxplot of frequency of response for the general effects domain

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree

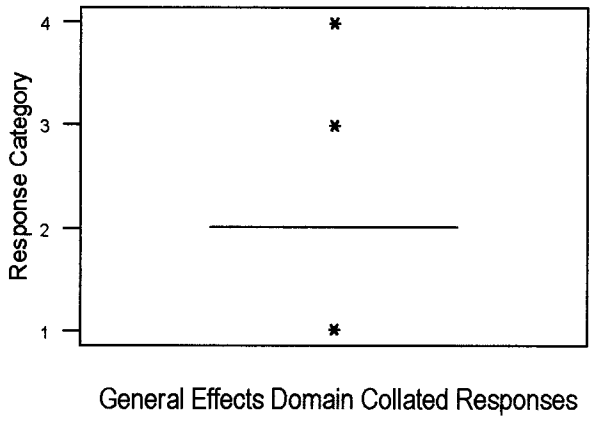


Fig. 18 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
General Domain	55	2.000	1.000	4.000	2.000	2.000	0.000

(Refer to chapter 4, section 1, page 35, for interpretation)

Statement-level analysis

Fig. 19 Pareto chart of responses to opinion statement twenty-five (wider effects domain)
(Since joining the scheme I pass on the message to other people that leisure centres are not just for 'sporty' people but for anyone who wants to exercise)

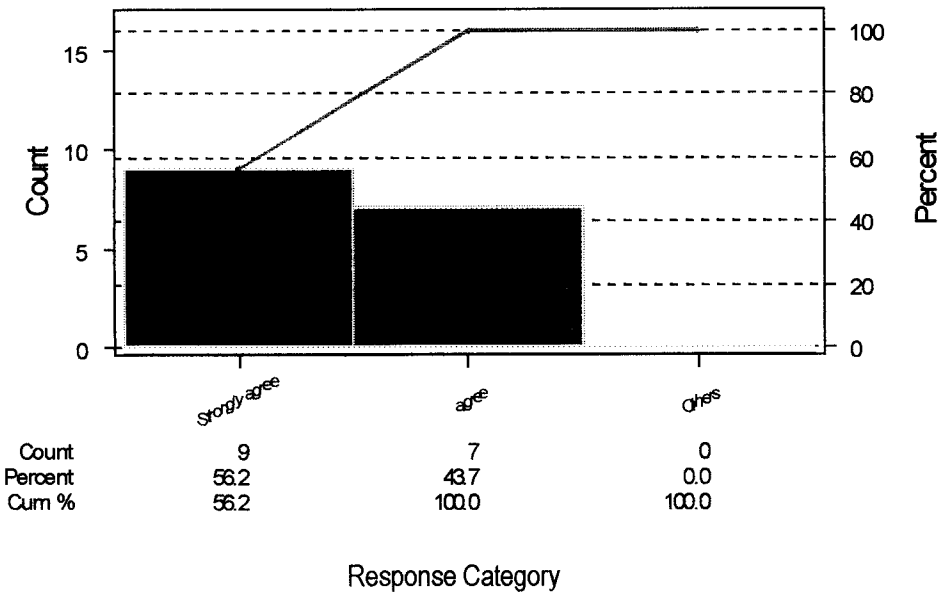
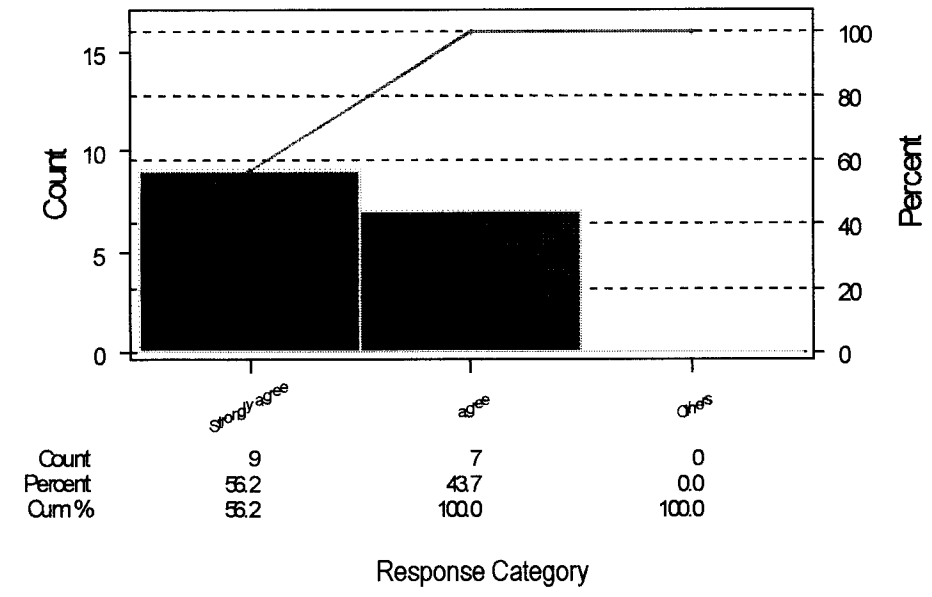


Fig. 20 Pareto chart of responses to opinion statement twenty-eight (cognitive effects domain)
(In participating in the scheme I feel that I am doing something positive with my life that helps counteract the effects of getting older)



(Refer to chapter 4, section 1, page 36, for interpretation)

Fig. 21 Pareto chart of responses to opinion statement seven (social effects domain)
(I feel the group effort towards the common goal of becoming more healthy is important)

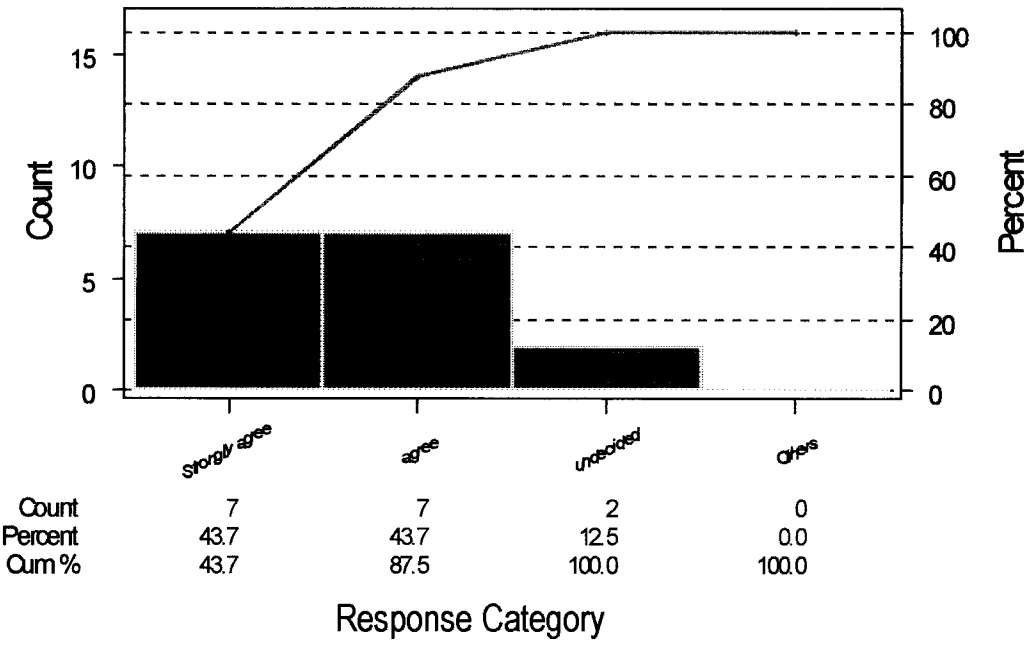


Fig. 22 Boxplot of frequency of response for opinion statement one (social effects domain)
(The scheme has given me the opportunity for social contact)

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree

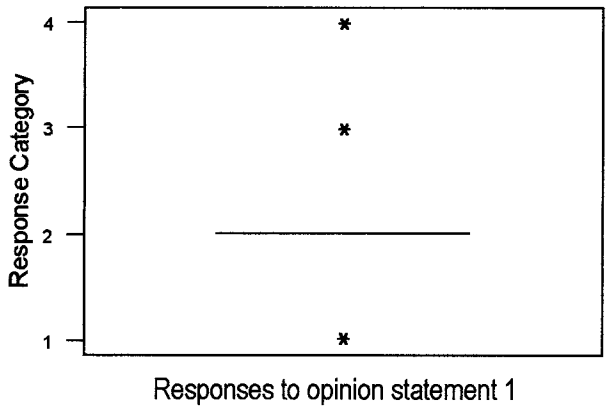


Fig. 22 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Opinion Statement 1	16	2.000	1.000	4.000	2.000	2.000	0.000

(Refer to chapter 4, section 1, page 36, for interpretation)

Fig. 23 Boxplot of frequency of response for opinion statement twenty-one (emotional effects domain)
(The scheme has become a meaningful part of my life)

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree

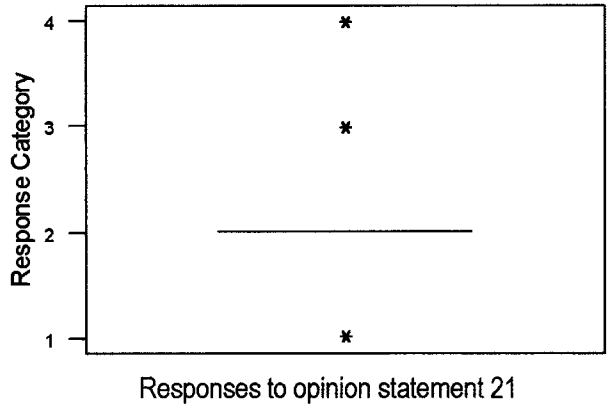
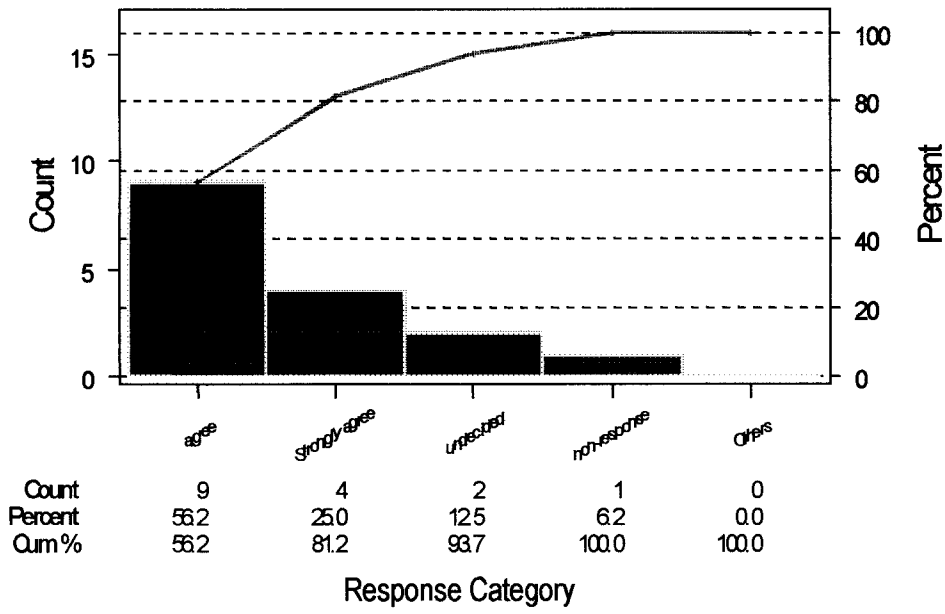


Fig. 23 Descriptive Statistics

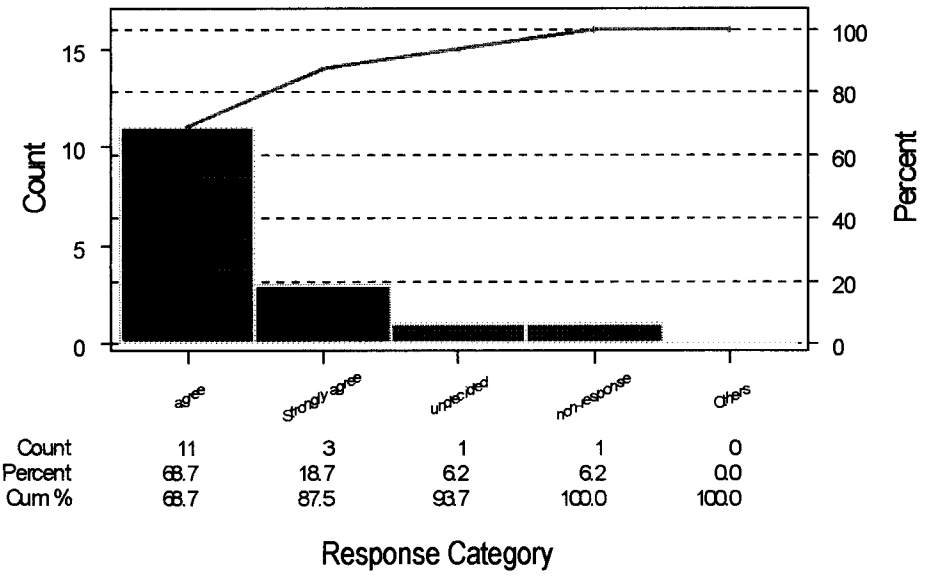
Variable	N	Median	Min	Max	Q1	Q3	IQR
Opinion Statement 21	16	2.000	1.000	4.000	2.000	2.000	0.000

Fig. 24 Pareto chart of responses to opinion statement thirty-two (general effects domain)
(Overall, I feel happier as a result of participating in the scheme)



(Refer to chapter 4, section 1, page 36, for interpretation)

Fig. 25 Pareto chart of responses to opinion statement thirty-three (general effects domain)
(Overall, I feel that my quality of life has improved as a result of my participation in the scheme)



Count	11	3	1	1	0
Percent	68.7	18.7	6.2	6.2	0.0
Cum %	68.7	87.5	93.7	100.0	100.0

Response Category

Fig. 26 Boxplot of frequency of response for opinion statement thirty-three (general effects domain)
(Overall, I feel that my quality of life has improved as a result of my participation in the scheme)

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided

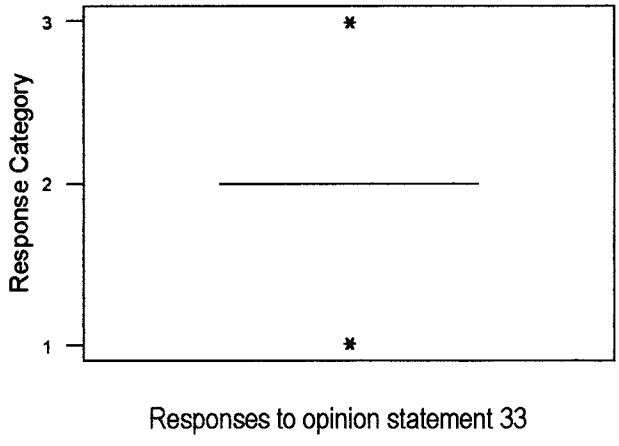
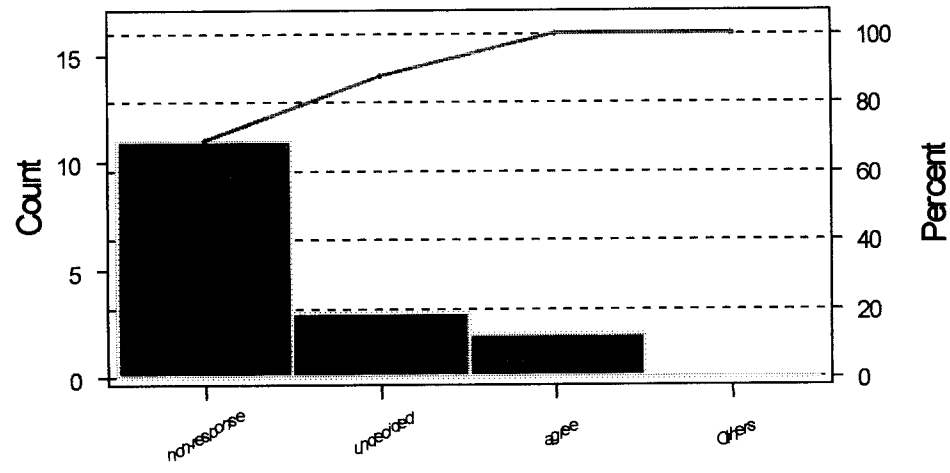


Fig. 26 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Opinion Statement 33	15	2.000	1.000	3.000	2.000	2.000	0.000

(Refer to chapter 4, section 1, pages 36 and 37, for interpretation)

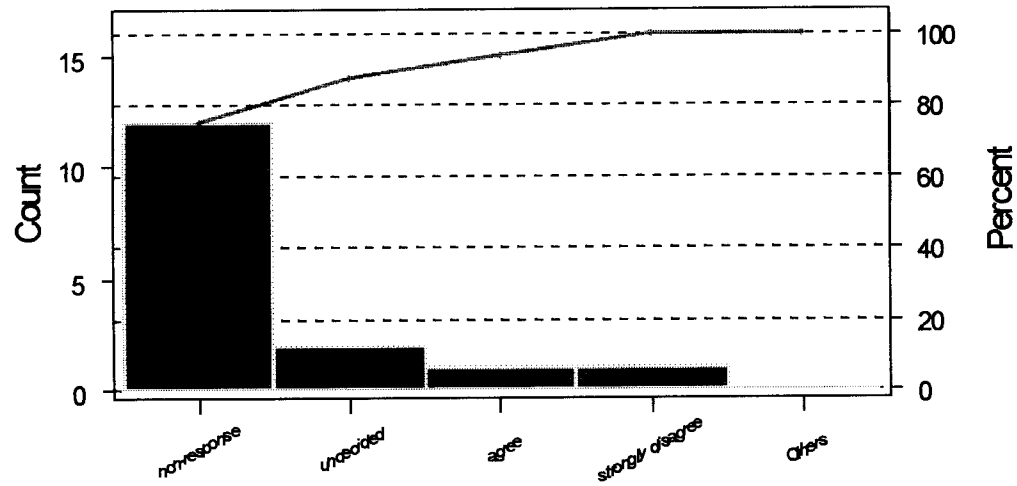
Fig. 27 Pareto chart of responses to opinion statement twelve (psychological effects domain)
(If you felt depressed before starting the scheme – Because of participating in the scheme I feel less depressed)



Count	11	3	2	0
Percent	68.7	18.7	12.5	0.0
Cum %	68.7	87.5	100.0	100.0

Response Category

Fig. 28 Pareto chart of responses to opinion statement thirteen (psychological effects domain)
(If depression is/was a health problem for you – In giving me a reason to get out of bed and get out of the house, the scheme has helped my depression)



Count	12	2	1	1	0
Percent	75.0	12.5	6.2	6.2	0.0
Cum %	75.0	87.5	93.7	100.0	100.0

Response Category

(Refer to chapter 4, section 1, page 37, for interpretation)

Fig. 29 Pareto chart of responses to opinion statement twenty (emotional effects domain)
(If you felt lonely before joining the scheme – My participation in the scheme has helped me to feel less lonely)

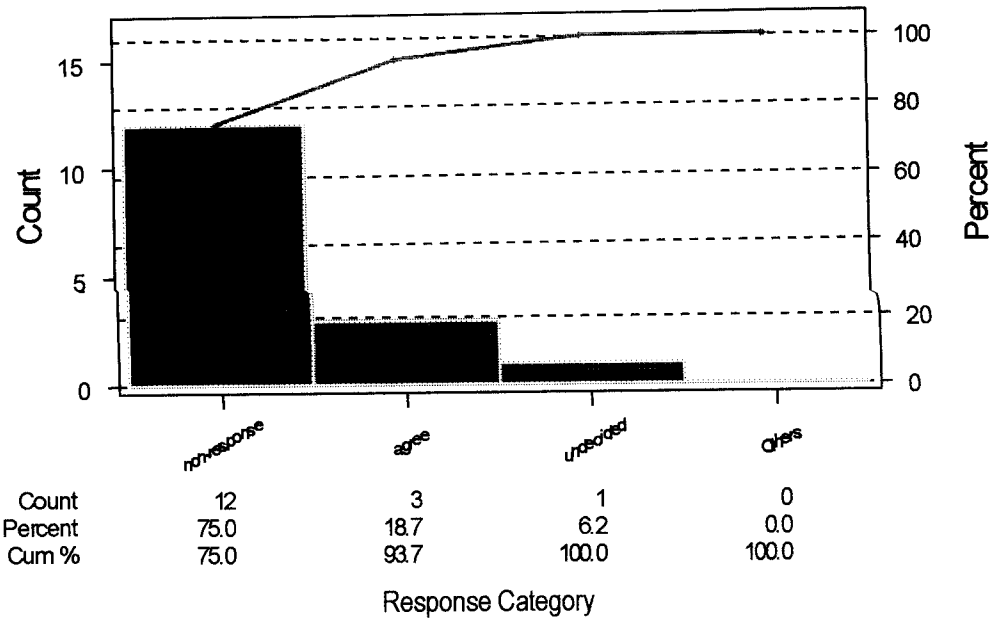


Fig. 30 Boxplot of frequency of response for opinion statement fourteen

Response Category Key

1 = strongly agree
2 = agree
3 = not sure/ undecided
4 = disagree

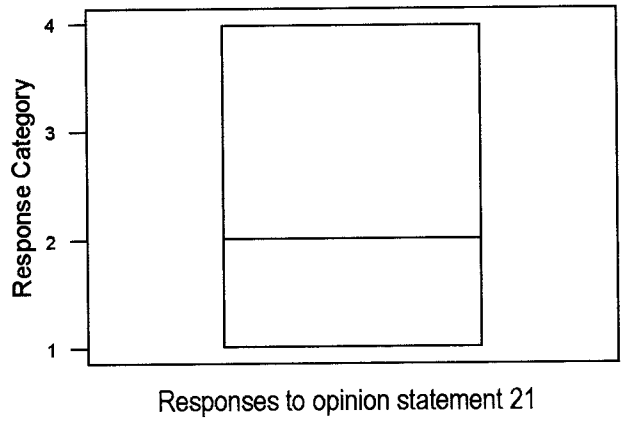
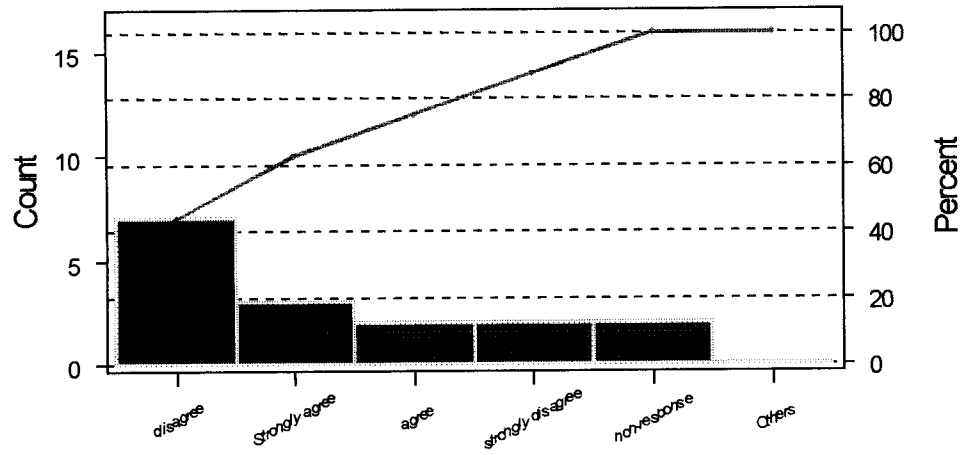


Fig. 30 Descriptive Statistics

Variable	N	Median	Min	Max	Q1	Q3	IQR
Opinion Statement 21	7	2.000	1.000	4.000	1.000	4.000	3.000

(Refer to chapter 4, section 1, pages 37 and 38, for interpretation)

Fig. 31 Pareto chart of responses to opinion statement twenty-three (wider effects domain)
(Because I participate in the scheme my partner has been encouraged to join the scheme or to exercise)



Count	7	3	2	2	2	0
Percent	43.7	18.7	12.5	12.5	12.5	0.0
Cum %	43.7	62.5	75.0	87.5	100.0	100.0

Response Category

(Refer to chapter 4, section 1, page 38, for interpretation)